Vol. 1069 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

August 26, 1986

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DEPARTMENT
OF COMMERCE

Patent
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Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 1.1(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Mar. 31, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Aug. 23, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,399,567 through 4,400,828
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JUNE 8, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,333,207	06/219,363	6/08/82
4,333,235	06/233,787	6/08/82
4,333,241	06/247,222	6/08/82
4,333,252	06/266,568	6/08/82
4,333,254	06/251,477	6/08/82
4,333,260	06/253,101	6/08/82
4,333,271	06/243,470	6/08/82
4,333,302	06/243,551	6/08/82
4,333,305	06/237,879	6/08/82
4,333,411	06/283,403	6/08/82
4,333,449	06/272,596	6/08/82
4,333,456	06/232,630	6/08/82
4,333,457	06/232,633	6/08/82
4,333,458	06/232,634	6/08/82
4,333,459	06/240,259	6/08/82
4,333,481	06/287,896	6/08/82
4,333,562	06/230,315	6/08/82
4,333,592	06/221,377	6/08/82
4,333,604	06/253,692	6/08/82
4,333,676	06/237,064	6/08/82
4,333,737	06/258,984	6/08/82
4,333,756	06/241,491	6/08/82
4,333,779	06/236,967	6/08/82
4,333,802	06/227,306	6/08/82
4,333,825	06/229,297	6/08/82
4,333,831	06/219,036	6/08/82
4,333,863	06/233,738	6/08/82
4,333,929	06/226,180	6/08/82
4,333,935	06/248,113	6/08/82
4,333,943	06/216,516	6/08/82
4,333,944	06/233,294	6/08/82
4,333,967	06/224,626	6/08/82
4,334,018	06/216,696	6/08/82
4,334,035	06/245,436	6/08/82
4,334,048	06/267,111	6/08/82
4,334,228	06/249,440	6/08/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,805,532, Re. S.N. 855,001, Filed Apr. 22, 1986, Cl. 405/264, CONSOLIDATION OF AGGREGATE MATERIAL, John F. Kistner, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Donald M. Sell, Ex. Gp.: 351

4,235,789, Re. S.N. 820,899, Filed Jan. 21, 1986, Cl. 129/260, PROCESS FOR THE PREPARATION OF 1-AMINO-2-BROMO-4-HYDROXYANTHRAQUINONE, James R. Stout, Owner of Record: *Mobay Chemical Corp., Pittsburgh, Pa.,* Attorney or Agent: Gene Harsh, Joseph C. Gil, et al., Ex. Gp.: 129

4,245,417, Re. S.N. 876,749, Filed June 6, 1986, Cl. 40/513, PICTURE VIEWER, Peter Ackeret, Owner of Record: *Licinvest AG, Chur, Switzerland,* Attorney or Agent: Ralph H. Chilton, Ex. Gp.: 333

4,301,466, Re. S.N. 811,670, Filed Dec. 20, 1985, Cl. 358/13, FAST ACTING PHASE APPARATUS FOR USE IN DIGITAL SAMPLING SYSTEMS, Maurice G. Lemoine, et al., Owner of Record: *Ampex Corp., Redwood City, Calif.,* Attorney or Agent: William A. Marvin, Ex. Gp.: 262

4,346,972, Re. S.N. 820,894, Filed Jan. 17, 1986, Cl. 211/354, CAMERA EQUIPPED WITH AN AUTOMATICALLY CONTROLLING DEVICE FOR FOCUSSING AND SHUTTER OPERATION, Tamotsu Takahashi, Owner of Record: *Inventor,* Attorney or Agent: Cushman, Darby, et al., Ex. Gp.: 211

4,371,495, Re. S.N. 827,172, Filed Feb. 5, 1986, Cl. 221/376, SELF RUPTURING GAS MODERATOR ROD FOR A NUCLEAR REACTOR, George R. Marlatt, Owner of Record: *Inventor,* Attorney or Agent: W. D. Palmer, Ex. Gp.: 221

4,423,882, Re. S.N. 773,561, Filed Sept. 9, 1985, Cl. 280/33.99, SHOPPING CART WITH BABY SEAT, Don A. Stover, et al., Owner of Record: *UNR Industries, Inc., Chicago, Ill.,* Attorney or Agent: James W. Clement, et al., Ex. Gp.: 316

4,439,934, Re. S.N. 849,383, Filed Apr. 3, 1986, Cl. 36/44, ORTHOTIC INSERT, Dennis N. Brown, Owner of Record: *Northwest Podiatric Laboratories, Inc., Blaine, Wash.,* Attorney or Agent: Robert B. Hughes, et al., Ex. Gp.: 247

4,445,761, Re. S.N. 858,211, Filed Apr. 30, 1986, Cl. 354/402, AUTOMATIC FOCUSING DEVICE FOR USE IN A CAMERA, Norio Ishikawa, et al., Owner of Record: *Minolta Camera, Osaka, Japan,* Attorney or Agent: Joseph W. Price, et al., Ex. Gp.: 211

4,449,023, Re. S.N. 863,644, Filed May 15, 1986, Cl. 200/159B, TRANSPARENT SWITCH HAVING FINE LINE CONDUCTORS, Jacques J. Hilhorst, et al., Owner of Record: *AMP, Inc., Harrisburg, Pa.,* Attorney or Agent: Jay L. Seitchik, et al., Ex. Gp.: 243

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Errata

"All reference to Patent No. 4,473,224 to Charles A. Prano of Tex. for 'ATHLETIC TRAINING APPARATUS' appearing in the Official Gazette of Sept. 25, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,603,049 to Richard A. Houghten of Calif. for 'SYNTHETIC HEAT-STABLE ENTEROTOXIN POLYPEPTIDE OF ESCHERICHIA COLI AND MULTIMERS THEREOF'

appearing in the Official Gazette of July 29, 1986 should be deleted since no patent was granted."

Using Certificate of Correction to Perfect Claim for Priority Under 35 USC 119

Under 35 USC 119, an applicant may assert a right of priority and claim the benefit of an earlier filing date in a foreign country. In this regard, 35 USC 119 states:

> No application for patent shall be entitled to this right of priority unless a claim therefor and a certified copy of the original foreign application, specification and drawings upon which it is based are filed in the Patent and Trademark office before the patent is granted. . . .

The failure to perfect a claim to foreign priority benefits prior to issuance of the patent may be cured by filing a reissue application; *Brenner* v. *State of Israel*, 158 USPQ 584 (CA DC 1968).

However, under certain conditions, this failure may also be cured by filing a Certificate of Correction request under 35 USC 255 and 37 CFR 1.323. For example, in the case of *In re Van Esdonk*, 187 USPQ 671 (Comr. 1975), the Commissioner granted a request to issue a Certificate of Correction in order to perfect a claim to foreign priority benefits. In that case, a claim to foreign priority benefits had not been filed in the application prior to issuance of the patent. However, the application was a continuation of an earlier application in which the requirements of 35 USC 119 had been satisfied. Accordingly, the Commissioner held that the "applicants' perfection of a priority claim under 35 USC 119 in the parent application will satisfy the statute with respect to their continuation application."

Although *In re Van Esdonk* involved the patent of a continuation application filed under 37 CFR 1.60, it is proper to apply the holding of that case in similar factual circumstances to any patented application having benefits under 35 USC 120. This is primarily because a claim to foreign priority benefits in a continuing application, where the claim has been perfected in the parent application, constitutes in essence a mere affirmation of the applicant's previously expressed desire to receive benefits under 35 USC 119 for subject matter common to the foreign, parent, and continuing applications.

In summary, a Certificate of Correction under 35 USC 255 and 37 CFR 1.323 may be requested and issued in order to perfect a claim to foreign priority benefits in a patented continuing application if the requirements of 35 USC 119 had been satisfied in the parent application prior to issuance of the patent and the requirements of 37 CFR 1.55(a) are met.

However, a claim to foreign priority benefits cannot be perfected via a Certificate of Correction if the requirements of 35 USC 119 had not been satisfied in the patented application, or its parent, prior to issuance and the requirements 37 CFR 155(a) are not met. In this latter circumstance, the claim to foreign priority benefits can be perfected only by way of a reissue application in accordance with the rationale set forth in *Brenner* v. *State of Israel, supra*.

RENE D. TEGTMEYER,
July 25, 1986. *Assistant Commissioner for Patents.*

Availability of Foreign Patents

The full collection of foreign patents maintained by the Patent and Trademark Office is now available. This includes the many foreign patents which have been unavailable for some time due to a shelving collapse at the Patent and Trademark Office's Newington, Va. storage facility. That portion of the collection has been restored to operation.

All requests for foreign patents can be presented in person to:

Foreign Patent Document Retrieval
and Copy Branch
Crystal Plaza Bldg. 3–4, 2nd Fl.,
Scientific Library
2021 Jefferson Davis Hwy.
Arlington, Va.

or can be mailed to:

Patent and Trademark Office
Scientific Library
Foreign Patent Division
Washington, D.C. 20231

Each document copy requested is $10.

WILLIAM S. LAWSON,
Administrator for Documentation.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished the Director, Office of Enrollment and Discipline on or before Sept. 30, 1986:

Bailey, John P., 240 Old "Y" Rd., Golden, Colo. 80401
Boggs, Bruce J., Jr., 2809F S. Woodrow St., Arlington, Va. 22206
Botulynsky, George A., National Defence Headquarters, 101 Colonel By Dr., Ottawa, Ontario, Canada K1A 0K2
Donofrio, John, 3719–B Madison La., Falls Church, Va. 22041
Gilden, Leon, 5210 S. Cree Dr., Spokane, Wash. 99207
Hofbauer, Patrick J., Hirons, Rogers & Scott, Suite 201, 222 Lakeshore Rd. East, Oakville, Ontario, Canada LJ6 6J3
Miller, Guy M., 25 Ashmont Ct., Silver Spring, Md. 20906
Muncy, Joe M., Jr., 3052 S. Buchanan St., C–1, Arlington, Va. 22206
Williamson, Dennis J., 8318 S. Tripp St., Chicago, Ill. 60652

CAMERON WEIFFENBACH,
July 30, 1986. *Director, Office of Enrollment and Discipline.*

Public Advisory Committee for Trademark Affairs Notice of Open Meeting

In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92–463), announcement is made of the following Committee meeting:

The Public Advisory Committee for Trademark Affairs will meet from 9:30 a.m. until 5:00 p.m. on Sept. 4, 1986, at the U.S. Patent and Trademark Office in Rm. 11C24 of Bldg. 3, Crystal Plz., located at 2021 Jefferson Davis Hwy., Arlington, Va.

The agenda for the meeting is as follows:

(1) Status of Trademark Examining Operation Activities
(2) Operations of the Trademark Trial and Appeal Board
(3) Post-Registration Activities
(4) Quality of the Registration Process
(5) Financial Reports
(6) Automation Activities

The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come first-served basis.

If time permits, oral comments by the public of three (3) minutes on each topic within the above agenda will be allowed. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed.

Copies of the minutes will be avai'able upon request.

For further information, contact Ellen J. Seeherman, Office of the Assistant Commissioner for Trademarks, Rm. CP3-11C17, Patent and Trademark Office, Washington, D.C. 20231. Telephone: 703-557-7464.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Aug. 4, 1986.

Status of PTO Services

The following is an update of the status of PTO services for July 1986:

Service Item	FY 1985 Goal (Calendar Days)*	FY 1986 Goal (Calendar Days)*	Monthly Average (Calendar Days)*
Filing Receipts:			
Patents	22	22	29**
Trademarks	30	30	40***
Patent/Trademark Copies:			
Special Window Coupons	1	1	4 hours
Window Coupons	5	5	2.1
Mail Coupons	15	12	4
Letter Orders	24	16	10
Date of oldest unfilled order			July 23, 1986
Current Mail Date being processed			July 29, 1986
Certified Copies:			
Trademark Registrations	30	21	15
Applications-As-Filed	20	10	9
File-Wrapper/Contents	N/A	N/A	5
Walk-up Certification	1	1	1.5
Trademark Search Library:			
Filing Pending Marks	21	21	38
Filing Reg. Certificates	3	Issue Date	4 days Late
Assignments:			
Patents	25	20	19
Trademarks	25	20	19
Avg. Days from Issue Fee Payment to Issue Date	90–100	90–100	101****
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Issue Date	99% on Issue Date
Trademark Copies Available	Issue Date	Issue Date	99% on Issue Date

*Unless otherwise noted.
**Monthly average reduced by 3 days.
***Tapes received late from contractor.
****Interval from fee payment to issuance is increasing because of the decision to print 4,000 fewer patents than originally planned in FY 86.

IMPROVEMENTS TO SERVICES

- *File History Retrieval* —All the shelving has been installed at the recently established PTO Supplemental File Repository in Newington, Va. All abandoned patent applications formerly stored at the Federal Records Center in Suitland, Md. have been retrieved and are now stored at Newington. U.S. Patent numbers 3,600,000 through 3,999,999 are in the process of being retrieved from the Records Center for storage at Newington. Estimated completion of this transfer is early Aug. 1986.

HELPFUL HINTS FROM THE PTO

- *NEW APPLICATIONS—Payment of Processing and Retention Fees*—An application, which has become abandoned pursuant to 37 CFR 1.53(d) for failure to pay the filing fee, will be disposed of unless the processing and retention fee set forth in §1.21(l) is paid within the 1-year period referred to in §1.53(d). Moreover, the processing and retention fee must be timely paid in order to obtain certified copies of the application (e.g., for convention priority purposes) or to establish in a later filed application the filing date benefit of an earlier copending application under 35 USC 120 and 37 CFR 1.78(a)(3). Therefore, an application which has become abandoned for the reasons set forth above should be immediately reviewed in order to timely determine the advisability of submitting a processing and retention fee payment.
Direct any questions regarding this helpful hint to:

Al Lawrence Smith
Director, Group 350
(703) 557-3414

Aug. 1, 1986.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 26, 1986

Re. 32,022	4,546,090	4,574,896	4,587,778
D. 283,449	4,547,927	4,574,903	4,587,953
4,340,437	4,548,015	4,575,446	4,587,984
4,343,210	4,549,802	4,575,629	4,588,124
4,397,730	4,550,192	4,575,660	4,588,231
4,398,653	4,550,710	4,575,776	4,588,312
4,406,692	4,551,735	4,575,945	4,588,372
4,444,391	4,551,818	4,576,357	4,588,460
4,448,499	4,551,986	4,577,201	4,588,540
4,469,833	4,552,442	4,577,318	4,588,709
4,472,110	4,554,369	4,577,454	4,588,979
4,477,305	4,554,805	4,577,706	4,589,476
4,479,740	4,555,241	4,577,762	4,589,679
4,488,179	4,555,560	4,578,120	4,589,958
4,491,618	4,555,568	4,578,828	4,590,010
4,493,797	4,556,264	4,578,974	4,590,054
4,498,076	4,557,877	4,579,117	4,590,075
4,499,165	4,557,915	4,581,036	4,590,550
4,499,183	4,558,134	4,581,058	4,590,551
4,499,385	4,560,749	4,581,264	4,590,558
4,508,435	4,561,024	4,581,308	4,590,666
4,514,867	4,561,397	4,581,533	4,590,796
4,515,351	4,561,461	4,581,666	4,590,938
4,518,613	4,561,765	4,582,216	4,591,426
4,518,670	4,563,421	4,583,707	4,591,443
4,521,585	4,563,431	4,584,503	4,591,503
4,522,198	4,563,820	4,584,742	4,591,523
4,522,863	4,565,421	4,584,867	4,591,575
4,522,970	4,565,575	4,584,970	4,591,624
4,527,559	4,565,931	4,584,982	4,591,960
4,527,777	4,566,231	4,585,034	4,592,590
4,528,131	4,566,273	4,585,142	4,592,595
4,530,063	4,566,483	4,585,156	4,592,709
4,531,703	4,566,670	4,585,256	4,592,917
4,532,060	4,567,141	4,585,284	4,592,988
4,533,231	4,567,527	4,585,404	4,593,175
4,535,215	4,567,648	4,585,443	4,593,314
4,537,045	4,567,818	4,585,562	4,593,460
4,537,258	4,569,382	4,585,641	4,593,951
4,538,690	4,569,683	4,586,060	4,594,194
4,539,712	4,569,985	4,586,157	4,594,262
4,539,882	4,571,759	4,586,163	4,594,605
4,542,137	4,572,268	4,586,388	4,594,620
4,542,384	4,572,341	4,586,544	4,594,682
4,542,391	4,572,637	4,586,565	4,595,518
4,542,496	4,572,957	4,587,114	4,596,014
4,543,300	4,573,115	4,587,132	4,596,075
4,543,588	4,573,142	4,587,219	
4,544,931	4,573,343	4,587,570	
4,544,982	4,573,350	4,587,607	

Disclaimers

Des. 251,088. —*Logan W. Johnson,* Minnetonka, Minn.; *John W. Henline,* Lisbon, N. Dak.; *Joseph M. Mather,* Lisbon, N. Dak.; *James J. Bauer,* Lisbon, N. Dak. SKID STEER LOADER VEHICLE BODY. Patent dated Feb. 13, 1979. Disclaimer filed June 20, 1986, by the assignee, *Clark Equipment Co.*

The term of this patent subsequent to May 2, 1992 has been disclaimed.

Des. 264,939.—*Hugh J. Stock,* Saratoga, Calif. BOTTLE OR THE LIKE. Patent dated June 15, 1982. Disclaimer filed June 16, 1986, by the assignee, *Pacer Technology & Resources, Inc.*

The term of this patent subsequent to June 15, 1982, has been disclaimed.

4,074,990.—*Stanley F. Brzozowski,* Coraopolis; *Joseph E. Cooper,* Brackenridge, both of Pa. METHOD OF PREPARING COLEMANITE-CONTAINING GLASS BATCH. Patent dated Feb. 21, 1978. Disclaimer filed June 19, 1986, by the assignee, *PPG Industries, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 5 of said patent.

4,161,012.—*Francis V. Cunningham,* Western Springs, Ill. HIGH VOLTAGE PROTECTION APPARATUS. Patent dated July 10, 1979. Disclaimer filed Mar. 3, 1986, by the assignee, *Joslyn Corp.*

Hereby enters this disclaimer to claims 46 and 48 of said patent.

4,474,768.—*Gene M. Bright,* Groton, Conn. N-METHYL 11-AZA-10-DEOXO-10-DIHYDROERYTHROMYCIN A, INTERMEDIATES THEREFOR. Patent dated Oct. 2, 1984. Disclaimer filed June 19, 1986, by the assignee, *Pfizer, Inc.*

Hereby enters this disclaimer to claims 1, 2, 7 and 8 of said patent.

4,592,583.—*William L. Dresen,* Baraboo; *William F. Price,* Portage; *Phillip L. Emery,* Portage; *Harlan W. Breezer,* Portage, all of Wis. TRUCK CARGO BED LINER. Patent dated June 3, 1986. Disclaimer filed June 3, 1986, by the assignee, *Penda Corp.*

Hereby enters this disclaimer to claim 18 of said patent.

NOTICE

Following is a corrected version of the Final Rule for the Revision of Trademark Fees that was published in the Federal Register on August 4, 1986 at page 28052. The notice to correct the effective date to October 4, 1986 and make other typographical corrections was published in the Federal Register on August 8, 1986.

DEPARTMENT OF COMMERCE

Patent and Trademark Office
37 CFR Parts 1 and 2

[Docket No. 60457-6119]

Revision of Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Final rule

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases, Parts 1 and 2 of title 37, Code of Federal Regulations, to adjust trademark fee amounts. This action is necessary at this time because trademark operating costs have increased over the past three and one-half years. The Commissioner is authorized by section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113), to establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services and materials related to trademarks and other marks.

EFFECTIVE DATE: October 4, 1986.

FOR FURTHER INFORMATION CONTACT: Margaret M. Laurence, Assistant Commissioner for Trademarks by telephone at (703) 557-3061 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This rule change is designed primarily to adjust trademark fees because costs have increased and the Commissioner is authorized to adjust fees for the filing and processing of an application for the registration of a trademark or other mark and for all other processing, services or materials related to trademarks which have been established by the Commissioner in accordance with section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113).

Adjustments to fees for filing and processing a patent application and for other processing, services or materials related to patents were made by rules published in the Federal Register on August 6, 1985, at 50 FR 31818, effective October 5, 1985.

Adjustments to fees for filing and processing a trademark application and for other processing, services or materials related to trademarks were not proposed at that time, pending review of automation cost requirements. The Patent and Trademark Office's proposal for an integrated Automated Trademark System was included in the President's FY 1987 Budget and the Office's revised Automation Master Plan that were submitted to the Congress in February 1986.

BACKGROUND INFORMATION: Trademark fees are authorized by section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113). Section 31 grants the Commissioner the authority to establish trademark fees and the discretion to establish the level of Office costs to be recovered from trademark fees. The House Committee on the Judiciary, in House Report 97-542 accompanying H.R. 6260 that was enacted as Public Law 97-247, recommended a trademark fee schedule that was adopted by rule published in the Federal Register on July 30, 1982 at 47 FR 33086, effective October 1, 1982.

In House Report 97-542, the Committee stated that:

> "...[it] is aware of the concerns of users of the Trademark registration system, however, and intends to exercise vigorous oversight with respect to the Commissioner to ensure that fees remain at a reasonable level and that trademark registrations are processed in an efficient and cost effective manner. As part of this oversight, the Committee recommends the following fee structure to the Commissioner for Fiscal Year 1983.

Type of Fee:	Proposed fee
Application filing fee per class	$175
Renewal fee	300
Late renewal	100
Section 12(c) claim	100
New certificate	100
Certificate of correction	100
Disclaimer to registration	100
Amendment to registration	100
Per class combines section 8 and 15 affidavit	200
Per class section 8 affidavit alone	100
Per class section 15 affidavit alone	100
All petitions to Commissioner	100
Cancellation opposition per class	200
TTAB appeal	100
Certified copies	10
Copies of trademarks	1
Assignments	1/

> 1/ $100 plus for each mark in addition to 1."

The Patent and Trademark Office (PTO) believes it is reasonable to use fluctuations in the Consumer Price Index (CPI) during the previous three years to define the maximum aggregate revenue level that may be recovered from trademark fees for the three-year period 1986-1988. Fees would then be set to recover, in the aggregate, projected costs for the fee cycle, but under no circumstances would total revenues exceed the maximum revenue level that would be recovered if fees were adjusted by the CPI. This is consistent with the method mandated by Public Law 97-247 for adjusting patent fees.

The first step in the trademark fee adjustment process was to determine the maximum level of recovery for the three-year fee cycle. This was done by (1) multiplying present fees by projected workload for fiscal years 1986-1988, (2) totalling the results, and (3) applying the rate of fluctuation in the Consumer Price Index as determined by the Secretary of Labor.

The second step in the trademark fee adjustment process was to establish the total cost to be recovered from trademark fees for the three year period 1986-1988. The total costs for the filing and processing of an application for the registration of a trademark or other mark and for all other processing, services or materials related to trademarks were determined. The Office followed (1) the general guidelines set forth in OMB Circular A-25 entitled "User Charges", that establishes general policies for developing an equitable and uniform system of charges for certain Government services and property, and (2) the guidelines for accounting and reimbursement for sharing of information technology facilities as set forth in Appendix II to OMB Circular No. A-130 entitled "Management of Federal Information Resources."

The Office used cost-finding techniques for determining the costs of all processing, services and/or materials associated with each trademark fee. Costs were determined from the best available records and included both direct and indirect costs. Costs were adjusted to reflect projected increases or decreases contained in the President's FY 1987 Budget. These cost figures were documented by the Director, Office of Finance and reviewed by each responsible Assistant Commissioner.

The total projected costs for the three-year period 1986-1988 are lower than the maximum level of recovery which would be allowed if fees were adjusted strictly according to changes in the CPI during the past three years. In its adjustment of Trademark fees, PTO is expected to recover the total projected costs in fiscal years 1987 and 1988 plus a contingency of two percent of the estimated fee income for fiscal years 1987-1988.

This rule continues to follow the suggested fee schedule contained in House Report 97-542, with the exception of increases to the fee for filing an application for registration and the fee for a printed copy of a registered mark. As a result of continuing to follow this suggested fee schedule, over the two-year period, some trademark fees would recover more than their actual estimated cost and some would recover less than their actual estimated cost. Using the 1986-1988 workload projections, the total fee revenues generated by the adjusted fees for the three-year period, in the aggregate, would not exceed the total projected costs for trademarks for the same period, apart from the contingency.

It is intended that the amount of any fee due and payable on or after October 4, 1986 is the amount set in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing, where authorized under section 1.8 of title 37, Code of Federal Regulations, will be considered to be the date of receipt in the Office. A "Certificate of Mailing under section 1.8" is not "proper" for items which are specifically excluded from the provisions of section 1.8. Section 1.8 of title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is not "proper." The provisions of section 1.10, relating to filing of papers and fees by "Express Mail" with certificate, however do apply to any paper or fee to be filed in the Office. If an application or fee is filed by "Express Mail" with a certificate of mailing dated October 4, 1986, the amount of the fee to be paid is the fee established herein if a change is being made in the fee.

To ensure clarity in the implementation of the fee proposals, a discussion of specific sections is set forth below:

DISCUSSION OF SPECIFIC CHANGES

Section 1.24 Coupons

Section 1.24 is amended to adjust the fee for the purchase of coupons for trademarks to make it comparable to the proposed fee required for the purchase of a printed copy of a registered mark.

Section 2.6 Trademark fees

Section 2.6 is amended to adjust trademark fees established pursuant to the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113) and set forth in paragraphs (a) and (n) of this section to more closely reflect the cost to the Office of such processing.

Section 2.6, paragraph (o) is amended to provide a $25 fee for the expedited handling of a request for a certified copy of a trademark record. Currently there is no procedure for such expedited handling, and the Office has received many requests that this service be provided.

Section 2.6, paragraph (q), is amended to clarify that the fee for recording documents applies to every paper which relates to the property in a registration or application. This is in accord with past and current Office policy.

Response to Comments on the Rules

Special comments were received on the proposed rule changes. Three letters submitting written comments were received. Oral testimony was presented by two people at the public hearing conducted on June 16, 1986. All of the written and oral comments were considered in adopting the changes set forth herein. The comments submitted appear below along with responses thereto.

Comment: The trademark fee increases of 1982 were accompanied by a commitment that the Trademark Operation would be shielded from government-wide cuts aimed at reducing the deficit. The applicability of the fiscal year 1986 Gramm-Rudman-Hollings sequestration of trademark funds represents a failure of the Federal Government to live up to its side of the bargain. Until these funds are restored to the Trademark Operation and the Administration states that it will not again undermine this provision of law, any effort to increase trademark fees must be deferred.

Reply: Public Law 97-247, enacted August 27, 1982, did not provide that the Trademark Operations are exempt from government-wide cuts in expenditures aimed at reducing the federal deficit. The only restriction, imposed by section 3(g), is that the fees collected from trademark activities "shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks." The PTO has fully complied with this requirement. Moreover, the Supreme Court has recently decided the constitutionality of Gramm-Rudman-Hollings (The Balanced Budget and Emergency Deficit Control Act of 1985, Public Law 99-177, enacted December 12, 1985), holding that the reductions to the federal deficit must be

accomplished via the enactment of a joint resolution of the Congress. See Bowsher v. Synar, Nos. 85-1377, 85-1378, and 85-1379 slip op. at 20 (July 7, 1986). Consequently, any budget reductions made by the PTO that are mandated by such a joint resolution will be pursuant to law. Therefore, the PTO is not required to defer increases in trademark fees since the provisions of Public Law 97-247 do not shield the Trademark Operations from such budget cuts and any such cuts are made pursuant to subsequent law.

Comment: The House of Representatives and the Senate have passed differing versions of H.R. 2434. Both versions prohibit the use of user fees for the search rooms and the House version prohibits user fees for automation. The PTO should withdraw the current proposal, and publish a new proposal for public comment, if needed, after Congress passes the authorization bill.

Reply: The PTO already is in compliance with the provision of the Senate and House authorization bills that prohibits use of fees to fund the search room. In fiscal year 1986, unobligated appropriated funds carried forward from fiscal year 1985 are being used to fund the paper Trademark Search Room. Appropriated funds for the Search Room were requested in the pending FY 1987 President's Budget.

Although the House version of H.R. 2434 prohibits the use of fee income for automation expenditures, it does not provide appropriated funds. The Senate version of H.R. 2434 does not prohibit the use of fee income for automation expenditures. Since there are significant differences between the House and Senate versions on this and other provisions, the PTO must wait for final action by both the Congress and the President.

In the meantime, the PTO will continue to operate in accordance with the 1986 Appropriations Act and the pending FY 1987 President's Budget, which fund Automation through user fees. If legislation is ultimately passed by the Congress and signed by the President that is contradictory to this plan, appropriate adjustments will be made. The suggestion to withdraw the current proposal, and to publish a new proposal for public comment, if needed, after Congress passes the authorization bill has not been adopted.

Comment: It is important for the PTO to make available detailed information concerning activities that are not supported by appropriations since government operations which are supported by user fee income receive far less scrutiny from government authorities (cabinet level department officials, Office of Management and Budget, and appropriation committees in Congress) than operations which are supported by appropriations.

Reply: The assertion that government operations supported by user fee income receive far less scrutiny from government authorities is not correct. Fee supported activities receive the same amount of oversight as activities supported by appropriations. In Senate Report 99-305 accompanying bill H.R. 2434, the Committee on the Judiciary said that:

"...Congress never envisioned that activities financed by user fees would be any more beyond the scrutiny of Congressional oversight than those activities that are paid for by appropriations. On the contrary, it is clear that the Office's

authority to collect and spend user fee money does not remove these activities from Congressional oversight and control.

...Both the authority to raise general revenue and the authority to allow the Office to set fees rests with Congress. If Congress is to carry out the responsibilities attending both of these exercises of its power, it must carefully review the effectiveness and efficiency of all agency activities no matter how they are funded. While it may be proper to restrict the funding of certain activities to appropriations, such restrictions cannot be justified solely by reference to the need to increase oversight. That reasoning implies that Congress has less concern over how the agency spends user fee money. In the case of the Patent and Trademark Office, this would imply that most of the agency's activities are not subject to effective congressional review, which, as pointed out above, is simply not true."

Specific examples of oversight include: (1) The budget process requires program levels to be fully justified regardless of funding sources; (2) the budget request is thoroughly analyzed and evaluated, without regard to revenue source, by the Department of Commerce, Office of Management and Budget (OMB) and the Appropriations Committees in the Congress; (3) fee revenues are appropriated annually by the Congress; (4) the use of fee money by the PTO is subject to the same OMB apportionment process as the use of appropriations; (5) Department of Treasury reports do not distinguish between funding sources; and (6) reprogramming (or redirection) of funds that vary from the enacted budget require Department and OMB approvals and Congressional notification, regardless of funding source.

In addition, since 1983 the PTO has routinely provided the Public Advisory Committee for Trademark Affairs with detailed reports which fully disclose the source and use of all trademark-related resources.

Comment: It is contrary to existing law (Public Laws 96-517 and 97-247) to spend user fee income for the search rooms and automation.

Comment: Despite representations that major capital expenses would be underwritten by General Fund revenues, not user fees, the PTO continues to rely on user fee income to finance its trademark automation project and the public search room.

Reply: User fee income is not being spent on the paper Trademark Search Room in fiscal year 1986. The paper Trademark Search Room is being funded from unobligated appropriated funds carried forward from fiscal year 1985. For fiscal year 1987, the PTO has requested $322,000 in appropriated funds to maintain the paper Trademark Search Room. Reference page 41 of the PTO's 1987 Budget Submission to the Congress.

Public Law 96-517, although enacted into law, was never fully implemented because the Congress passed H.R. 6260 which was enacted as Public Law 97-247 on August 22, 1982. The restrictions on the use of income from fee revenues, which were included in House Report 96-1307 accompanying Public Law 96-517, were based upon a 50 percent recovery of patent and trademark costs from user fees. Then-Commissioner Mossinghoff testified before the Subcommittee on Courts, Civil Liberties, and Administration of Justice, when Congress was considering H.R. 6260, that

the Administration's PTO user fee program was proposed to improve the quality of service at the PTO by reducing patent pendency, trademark pendency and automating patent and trademark operations. The Commissioner went on to say that: "The major increases in the three program areas will be paid for by the sharp increase in user fees that we are recommending." The Congressional debate on this proposal indicates that the Subcommittee approved these innovative fee provisions in order to improve the level of patent and trademark services provided to users of the office. Expenditure of funds since 1983 is believed to have met this goal.

Comment: There is no reason why any fee increases have to be in effect by October 1, 1986.

Reply: While there is no legal compulsion for an October 1, 1986 effective date for the fee increase, there are financial reasons for adjusting fees at that time. For every one-month of delay beyond October 1, 1986, the Trademark Operation will receive about $135,000 less in fee revenues which will mean that the program contemplated for fiscal year 1987 will be affected. The PTO's budget is prepared annually for the period October 1 through September 30 and it is important that planned expenditures equal planned income.

Comment: The Notice of Proposed Rulemaking justifies the proposed fee increase on the ground that the amount of the increase is less than the increase that has occurred in the Consumer Price Index.

Reply: The proposed fee increase is justified on the basis that costs have increased since October 1982 when the present fee schedule was established, and the Commissioner is authorized by section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113) to adjust fees.

On page 18290 of the Notice of Proposed Rulemaking under Summary it is stated that: "This action [to adjust trademark fees] is necessary at this time because trademark operation costs have increased over the past three and one-half years." On the same page, third column, the methodology used to determine the costs associated with each trademark fee was described. The Notice of Proposed Rulemaking then goes on to say that: "The total projected costs for the three-year period 1986-1988 are lower than the maximum level of recovery which would be allowed if fees were adjusted strictly according to changes in the CPI during the past three years." In other words, Trademark Operation costs for 1987-1988 are projected to be less than changes in the CPI during the past three years.

Comment: PTO has failed to justify why the trademark fee increases are necessary. The PTO should make calculations and other relevant information pertaining to the proposed increases available to the public and the Congress.

Reply: Because of the volume, it was not feasible for the PTO to publish the calculations and other relevant information upon which the proposed fee increases were based. As stated in the third column of page 18290 of the Notice of Proposed Rulemaking, the Office followed OMB guidelines and the cost figures were documented by the Director, Office of Finance [a Certified Public Accountant] and reviewed by each responsible Assistant

Commissioner. All of the backup documentation is available for review, upon request.

Comment: If costs are reduced as they were through the forced reductions in the PTO's budget authority under the Deficit Reduction Act, the entire concept on which the PTO calculates its trademark fees must be reconsidered before further fee increases can be reasonably considered.

Reply: The 1987 Federal budget submitted by the President to the Congress meets the 1987 deficit reduction goal established by the Balanced Budget and Emergency Deficit Control Act of 1985. Therefore, there is no basis for the PTO to assume alternative funding levels in 1987. The suggestion that the trademark unit cost calculations be reconsidered before further fee increases has not been adopted.

Comment: In the Notice of Proposed Rulemaking, the PTO requested comments on the methodology it employed in calculating the need for a fee increase. It is impossible to comment on the process itself in the absence of more detailed information.

Reply: The PTO did not request comments on the methodology it employed in calculating the need for a fee increase. On page 18291 of the Notice of Proposed Rulemaking, first column, it states that: "In its adjustment of Trademark fees, PTO seeks to recover total projected costs in FY 1987 and FY 1988 and to provide for a contingency of two percent of the estimated fee income for fiscal years 1987-1988. PTO seeks comments on this approach." No comments were received on the planned contingency. This fact notwithstanding, the PTO has adopted this approach as part of its excess fee policy.

Comment: The Notice of Proposed Rulemaking does not explain what expenses of the Office will be paid with trademark fees. In particular, the notice does not explain what items are included in "indirect costs."

Reply: The Commissioner has the authority to establish trademark fees and the discretion to establish the level of Office costs to be recovered from trademark fees. Since fiscal year 1983, the PTO has recovered 100 percent of the costs related to trademark processing, both direct and indirect. Direct costs are those represented by the Trademark budget activity (page 29 of the PTO's 1987 Budget Submission to the Congress): Trademark examination (including contractual costs for T-Search), the Trial and Appeal Board, and Trademark printing. Indirect costs are costs incurred by other offices in the PTO which carry out trademark activities: Customer Services (providing trademark copies to examining attorneys, processing certificates of correction and assignments, etc.), Publications (administration of the contract to print the Trademark Official Gazette), Management Planning (collecting and processing trademark fees), Administrative Services (mail processing, files repository, etc.) and Automation (TRAM operations, ATS implementation and operations, etc.) No trademark fees are used to fund the Office of the Commissioner, the Office of Legislation and International Affairs, the Office of the Solicitor, staff in the immediate Office of the Automation Administrator, or any other PTO function that is not directly related to trademark processing.

Comment: The Notice of Proposed Rulemaking does not explain how the Office's revised automation plans have affected the need for fee increases.

Reply: The Notice of Proposed Rulemaking, second column, page 18290 states that: "The Patent and Trademark Office's proposal for an integrated Automated Trademark System was included in the President's FY 1987 Budget and the Office's revised Automation Master Plan that were submitted to the Congress in February 1986." The PTO's 1987 Budget Submission to the Congress, page 32 states that: "The PTO requests a net increase of $901,000 to fund an automation initiative providing further improvements in the capabilities, performance, availability, and efficiency of the existing systems through enhancements for an integrated ATS (Automated Trademark System).... The full cost of the increase has been partially offset by a decrease of $624,000 for the T-Search contract. ATS will provide automated support to all Trademark operations currently supported by TRAM and T-Search."

In addition to Automation, other increases, such as four new positions for the Trademark Trial and Appeal Board, have caused costs to increase thereby necessitating the fee increase.

Comment: The Notice of Proposed Rulemaking contains no discussion of the policy of the House Judiciary Committee in 1982 of keeping the filing fee relatively low and recovering more than the actual cost for other trademark services or materials. Was this consideration taken into account in establishing the proposed fees?

Reply: The suggestion of the House Committee on the Judiciary that the filing fee be kept as low as possible to foster use of the Federal registration system was the basis for the proposed fee adjustments. The Notice of Proposed Rulemaking, first column, page 18290, quoted the text of House Report 97-542 which suggested that the Commissioner ensure that fees remain at a reasonable level. Included in the quote was the House Committee's recommended fee schedule that was adopted by rule published in the Federal Register on July 30, 1982.

Further, on page 18291, first column, it is stated that: "This proposed rulemaking would continue to follow the suggested fee schedule contained in House Report 97-542, with the exception of proposed increases to the fee for filing an application for registration and the fee for a printed copy of a registered mark. As a result of continuing to follow this suggested fee schedule, over the two-year period, some trademark fees would recover more than their actual estimated cost and some would recover less than their actual estimated cost."

Comment: The proposed increase of $25.00 for filing an application is against the concept of keeping the filing fee relatively low and recovering more than actual cost for other trademark services or materials.

Reply: The projected cost for filing an application for fiscal years 1987-1988 is $242.84 per application, per class. The Office has set the application fee at $200.00 or 21.4 percent below cost. At that reduced level, the Trademark Operation will lose almost $6 million over the two-year period which must be made up from other Trademark fees. The Trademark Operation is also losing revenues on other fees directly related to the

Federal registration of a trademark, i.e., fees for filing oppositions, appeals, and petitions. Combined with the application fee shortfall, the total loss over the two-year period will be almost $10 million. On the other hand, fees from renewals, Section 8 and 15 affidavits, and assignments are expected to generate excess revenues of about $9 million. This excess, plus another $1 million generated from some other trademark fees will equal the shortfall caused by the reduced fees for processing applications, oppositions, appeals and petitions.

Comment: The PTO should explain why it charges $100 for a trademark assignment and only $7.00 for a patent assignment. The cost to the government of recording a trademark assignment could not even come close to the $100 fee being charged.

Reply: The PTO charges more than the actual cost to record trademark assignments in order to subsidize other areas of the Trademark Operation, specifically the processing of applications. This is in accordance with the fee structure suggested by the House Committee on the Judiciary in House Report 97-542 which accompanied the bill which was enacted as Public Law 97-247. This policy was also recommended by various bar groups, including the Public Advisory Committee for Trademark Affairs.

Comment: Trademark fees are becoming increasingly onerous, particularly on small businesses which must often select less than the total number of classes to which they are entitled to file, for economic reasons. The filing fee for a trademark application already exceeds that for a small entity filing a patent application.

Reply: As reported on page 18291 of the Notice of Proposed Rulemaking, the General Counsel of the Department of Commerce certified to the Small Business Administration that the proposed rule change will not have a significant adverse economic impact on a substantial number of small entities because the increase is modest in comparison with the 400 percent increase in the application fee in October 1982, and the increase then had no noticeable impact. While the Office has no way of ascertaining which applications are filed by small businesses, a review of the number of applications filed by individuals and partnerships during the years 1980-1982 prior to the 400 percent increase and the years 1983-1985 after the fee increase showed an increase, rather than a decrease, in the number of filings by individuals. This is confirmed by the total figures on filing which indicate that fees have not deterred applicants. The annual number of application classes filed for prior to the fee increase was 50,672, 52,149 and 55,152 in fiscal years 1979, 1980 and 1981, respectively. There was a dump of cases in September 1982 to avoid the October 1, 1982 fee increase, which distorts the filing data for fiscal years 1982 and 1983. However, filings have continued to increase at over five percent a year in 1984 and 1985 (61,480 and 64,677, respectively). Latest projections for 1986 indicate we will be receiving almost 68,800 applications, or 6.3 percent more than 1985.

Comment: Trademark fee income has been diverted to non-trademark activities.

Reply: No trademark fee income is used for any purpose other than trademark-related activities.

Comment: The PTO has vastly underestimated and understated the number of requests it receives for trademark copies and, as a consequence, Trademarks is not receiving appropriate credit for the income this service generates.

Reply: It is beyond the control of the PTO if a user buys a coupon for a patent copy and then uses it to pay for a trademark copy. To comply with the provisions of Public Law 97-247 that trademark fee income be used only for trademark-related activities, the Office of Finance has been crediting the Trademark account with revenues that equate to the number of trademark copies actually sold each month by the copy fulfillment contractor. The same accounting adjustment is being used for copies made on the vendor-operated copy machines.

Comment: The notice does not explain the 50 percent increase in the cost of printed copies of registered marks.

Reply: The cost of providing one trademark copy is $1.95 based on projected costs for fiscal years 1987 and 1988. These costs include $43,100 for personnel compensation and benefits, $53,200 for contractor costs, $25,300 for services, supplies and depreciation of capital equipment, and $24,500 for general and administrative expenses. Assuming 74,900 trademark copies will be sold over the two-year period, the unit cost is $1.95. The PTO proposed to increase the fee for a trademark copy by $.50 to $1.50 to more closely reflect the cost of providing a trademark copy, and to make it comparable to the fee for a patent copy for ease of administration.

Comment: How is the $25.00 fee for expedited handling of certification requests justified?

Reply: The Office followed OMB Circular A-25 Guidelines on "User Charges" to determine the projected direct and indirect costs for expedited handling of certification requests. Circular A-25 provides that a reasonable charge should be imposed to recover the full cost to the Government of rendering a service to an identifiable recipient.

The Assistant Commissioner for Trademarks has estimated that about 1,000 requests for expedited certification would be received each year. This estimate is based on the number of public inquiries presently received for special handling for certifications.

Assuming about 2,000 requests for expedited certification will be received during the two year period 1987-1988, it is estimated that the costs would be $49,248, or $25.00 per unit rounded to the nearest dollar. The costs include $40,982 for personnel compensation and benefits for 2.1 staff years of effort, and $8,266 for general and administrative expenses (20.17 percent of direct costs).

The PTO intends to issue guidelines regarding the expedited service procedures prior to October 1, 1986. Requests delivered to the Trademark Services Division before noon will be available for pick-up or mailing no more than three working days thereafter.

Comment: The Senate version of H.R. 2434 would require the PTO to report annually several items of statistical information

concerning the Office's fee collections and expenses; i.e., a list of patent and trademark fee collections, and lists of the activities of the Office supported by patent fees, trademark fees and appropriations. This type of information should be made available to the public before any fees are increased.

Reply: The PTO is already providing lists of patent and trademark fee collections in Table 4 of the Commissioner's Annual Report. The report is sent to the Congress and is available for public dissemination. Since 1983, the PTO has periodically provided detailed information to the Public Advisory Committee on Trademark Operations which includes a list of PTO activities supported by trademark fees. Upon enactment of an authorization bill, the PTO will comply with the requirements of both the legislation and the accompanying report.

Comment: The PTO should expand the information contained in the Congressional budget under Fee Functions to show the amount of trademark and patent fee income dollars and the amount of appropriated dollars that are being used to support each item in its budget.

Reply: The Congressional Budget is prepared in the format requested by the House and Senate Appropriations Subcommittees. As indicated above, the PTO will comply with any additional reporting requirements that may be included in enacted authorizing legislation.

With regard to trademark user fees, since 1983 the PTO has routinely provided the Public Advisory Committee for Trademark Affairs with detailed reports which fully disclose the source and use of all Trademark-related resources. The reports include resources (e.g., unobligated resources, balances carried forward from prior years, excess fees from prior years, and current-year's fees); expenditures for direct trademark activities (examination, T-Search, Trial and Appeal Board, and printing), and indirect trademark activities (Customer Services, Publications, Management Planning, Administrative Services, and Automation); and backup documentation as requested. The PTO has regularly modified its reporting formats to accommodate the needs of the user community and is presently working with the Advisory Committee to develop a "business-type" financial report.

Comment: The PTO should adopt a policy of giving the public a minimum of 60 days to comment after every rule change proposal is published in the Federal Register.

Reply: The Administrative Procedure Act (5 U.S.C. 551 et. seq.) requires that the public be given the right to participate in the rulemaking process by commenting on proposed rules. The PTO makes every attempt to provide between 45 and 60 days but no less than 30 days for public comment. The public comment period is dependent on internal and external review requirements and effective date constraints.

OTHER CONSIDERATIONS: The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. There are no information collection requirements relating to trademark fee rules.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Public Law 96-354). Although these rules increase the trademark fees, the cost of Federal registration of a trademark is a small part of the cost of doing business. Furthermore, the incremental change is modest in comparison with the increase in the application fee in October 1982, and the increase then had no noticeable impact. Office records show no decline in the number of applications filed by individuals and partnerships after the October 1982 fee increases, and the rules maintain the present fee schedule for the most part, and limit the increase in the filing fee to the minimum amount possible.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interest, Courts, Inventions and patents, Lawyers, Trademarks.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 15 U.S.C. 1113 and 1123, and Public Law 97-247, the Patent and Trademark Office is amending title 37 of the Code of Federal Regulations as set forth.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

   Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.24 is proposed to be revised to read as follows:

   §1.24 Coupons

   Coupons in denominations of one dollar and fifty cents for the purchase of patents, designs, defensive publications, statutory invention registrations, and trademark registrations are sold by the Patent and Trademark Office for the convenience of the general public; these coupons may not be used for any other purpose. The one dollar and fifty cent coupons are sold individually and in books of 50 with stubs for record for $75. These coupons are good until used; they may be transferred but cannot be redeemed.

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

1. The authority citation for 37 CFR Part 2 would be revised to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, 25, unless otherwise noted.

2. Section 2.6 is amended by republishing the introductory text and revising paragraphs (a), (n), (o) and (q) to read as follows.

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

(a) For filing an application, per class.....$200.00

* * * * *

(n) For printed copy of registered mark
Copy only.....$ 1.50

* * * * *

(o) For certifying trademark records, per certificate.....$ 3.50

For expedited handling of such certification, per record requested.....$ 25.00

* * * * *

(q) For recording trademark assignments and agreements or other papers relating to the property in a registration or application, per document.....$100.00

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2965
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 19, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	2-28-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	7-16-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	3-20-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-30-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-26-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-06-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-31-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-01-85

Expiration of patents: The patents within the range of numbers indicated below expire during July 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,452,362 to 3,458,862, inclusive

Plant Patents ..... Numbers 2,897 to 2,913 inclusive

REISSUES

AUGUST 26, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,229

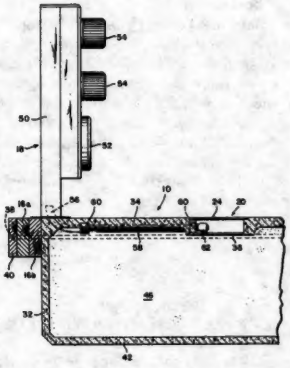
UTILITY DISTRIBUTION SYSTEM FOR MARINE FLOATS

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Original No. 4,353,320, dated Oct. 12, 1982, Ser. No. 137,594, Apr. 7, 1980. Application for reissue May 23, 1983, Ser. No. 497,059

Int. Cl.⁴ B63B *35/38*

U.S. Cl. 114—267 **13 Claims**



4. [The marine float of claim 3, wherein] *A marine float, comprising a concrete casing surrounding a buoyant core, said casing having a bottom, two opposed end walls, two opposed side walls connecting opposite edges of said end walls and a generally planar deck extending between the upper edges of said end and side walls, said deck having formed therein a longitudinal utility trench having a bottom connecting the lower edges of two trench walls, said trench extending from one end wall to the other of said end walls to facilitate the routing of utility conduits along said float, said float also having formed therein a transverse utility passage extending from said longitudinal utility trench to the exterior of said casing to facilitate the routing of utility conduits to utility outlets mounted adjacent the side walls of the casing, said casing further including a plurality of spaced-apart, generally parallel tie rods extending between said side walls beneath the bottom of said trench, and respective fasteners secured to the ends of said tie rods to tension said tie rods, thereby forcing the side walls of said casing toward each other to compressively load said casing;*

said casing further including a plurality of parallel, spaced-apart ribs projecting downwardly from said deck and integrally formed therewith between the side walls of said casing; and said tie rods [are] *being* embedded in respective [of said] ribs such that said ribs are compressively loaded by said tie rods.

Re. 32,230

RUBBER HOSE FOR AUTOMOTIVE FUEL LINE

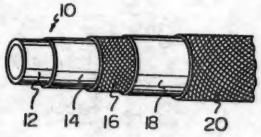
Seikoh Satoh, Yokohama, and Tadashi Suzuki, Gojo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Original No. 4,330,017, dated May 18, 1982, Ser. No. 71,291, Aug. 30, 1979. Continuation-in-part of Ser. No. 896,084, Apr. 13, 1978, abandoned. Application for reissue May 7, 1984, Ser. No. 607,584

Claims priority, application Japan, Apr. 22, 1977, 52-52133

Int. Cl.⁴ F16L *11/04*

U.S. Cl. 138—126 **10 Claims**



9. A hose for automotive fuel lines, comprising:

a two-ply rubber tube constituted of an inner layer of a copolymer of hexafluoropropylene with vinylidene fluoride which is resistant to hydrocarbon fuels including sour gasoline, formed by extrusion to serve as an innermost layer of the hose and an outer layer of a synthetic rubber selected from the group consisting of ethylene-acrylic rubber and epichlorohydrin rubber, which is less resistant to said fuels but has a better cold resistance than said fluorine rubber, formed by extrusion so as to bond to said inner layer, said inner layer having a thickness in the range from about 0.2 mm to about 0.7 mm, said outer layer having a thickness not smaller than the thickness of said inner layer;

a tubular reinforcing layer of a heat-resistant fibrous material intimately covering said outer layer; and

a tubular protective layer of a synthetic rubber intimately covering said reinforcing layer.

Re. 32,231

CONTAINER FOR METERED DISPENSING OF LIQUID

Alexander Kückens, Hamburg, and Horst Köhl, Reinfeld, both of Fed. Rep. of Germany, assignors to DAGMA Deutsche Automaten-und Getrakemaschinen-Gesellschaft mit beschrankter Haftung & Co., Reinfeld, Fed. Rep. of Germany

Original No. 4,109,829, dated Aug. 29, 1978, Ser. No. 726,455, Sep. 24, 1976. Continuation of Ser. No. 392,050, Jun. 25, 1982, abandoned, which is a continuation of Ser. No. 182,783, Aug. 29, 1980, abandoned. Application for reissue Jan. 23, 1984, Ser. No. 574,691

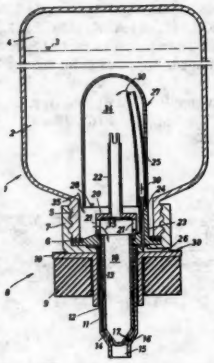
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1975, 2544671

Int. Cl.⁴ B67B *7/24*

U.S. Cl. 222—81 **7 Claims**

8. A container for metered dispensing of liquids, in particular for freezable or self-preserving liquids, including a withdrawal and venting opening which in operation is directed downwards in a dispensing position, an inverted cup-shaped pressure compensating vessel which has its rim situated close to the withdrawal and venting aperture and is open [only] towards this aperture incorporated within the container, the vessel simultaneously forming the closure of the container and having its rim sealingly connected to the rim of the withdrawal and venting aperture of the container, the interior of the pressure compensating vessel being in constant unobstructed communication with an atmosphere external of the container as well as

being in communication with the material inside of the container, said pressure compensating vessel having at least one wall portion which is deformable under differential pressure, a withdrawal valve including a metering chamber connected to the inside of the container and to the pressure compensating vessel via an upwardly extending passage, [which] *said* withdrawal valve [is] *being* electromagnetically actuated and equipped with a movable valve element constructed as an



armature, *and a sleeve in which said valve element is movably mounted,* characterized in that the valve element conjointly with [a] *said* sleeve guiding it delimits the metering chamber and that the guiding sleeve is constructed with individual *entry* openings for the liquid which is to be metered opening into the inside of the container at its upper extremity, and that the valve [sleeve] *element* is constructed as a valve slider for [alternating] *alternatingly* uncovering or covering the entry openings.

Re. 32,232

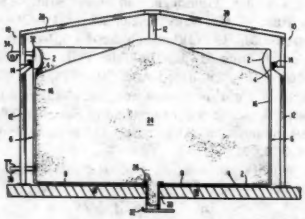
BIN FOR FREE FLOWING MATERIAL

Timothy C. Bonerb, and Vincent C. Bonerb, both of P.O. Box 2100, Buffalo, N.Y. 14219

Original No. 4,421,250, dated Dec. 20, 1983, Ser. No. 257,604, Apr. 27, 1981. Application for reissue Jun. 18, 1984, Ser. No. 621,868

Int. Cl.[4] B65D *88/62*

U.S. Cl. 222—95 **6 Claims**



1. A bin for free flowing granular material having a bottom resting on a support member and sides extending upwardly from said bottom, the bin comprising:

(a) a generally cup-shaped, open top, double walled, flexible *inflatable* bag having an inner membrane and an outer membrane, *both with side walls and* both of impervious material, forming the double wall;

(b) framework means for suspending the bag in an open position without providing any lateral support for the outer membrane of the bag, the top of the bag forming the top of the bin;

(c) clamp means carried by the framework means for clamping the bag adjacent the top edge thereof to thereby support and hang the side walls of the [membrane] *membranes* vertically so as to provide side walls without lateral support;

(d) a closable discharge port in the bottom of said bin extending through said inner membrane and said outer membrane and engaging said inner membrane and said outer membrane to form a substantially air tight space between said inner membrane and said outer [membrane] *membranes,* said closable discharge port allowing the free flowing granular material to drain from the bin for emptying the same down to the angle of repose of the free flowing granular material when the closable discharge [part] *port* is opened, thereby *causing the material to form an inner face having a generally inverted conical shape* creating a void of inverted conical shape within the original mass of the granular free flowing material with the apex of the inverted conical shape at the closable discharge port; and

(e) air inlet and outlet [passages] *passage means* through which air is forced or withdrawn between the inner membrane and the outer membrane;

(f) means to inflate the [closed] *inflatable* bag with fluid under controlled pressure so that the *inner membrane of the* bag will expand against the top edge *of* the granular free flowing material remaining after creating the void of inverted conical shape [void] to force this material into the void and hence down the closable discharge opening, so that the bag will continue to expand downwardly and inwardly until *substantially* all of the granular free flowing material is gradually forced into the inverted conical [shaped] *shape* void and out of the closable discharge port.

Re. 32,233

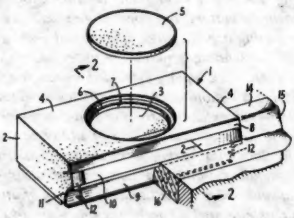
PRECAST CONCRETE CATCH BASIN WITH FORM FOR GUTTER INLET

Harold Peletz, Santa Rosa, Calif., assignor to Santa Rosa Cast Products Co., Santa Rosa, Calif.

Original No. 4,192,625, dated Mar. 11, 1980, Ser. No. 942,998, Sep. 18, 1978. Application for reissue Jun. 13, 1985, Ser. No. 744,429

Int. Cl.[4] E01C *11/22*

U.S. Cl. 404—5 **5 Claims**



1. In a catch basin assembly for collecting surface drainage from a street gutter wherein said catch basin has a pair of vertical substantially parallel side walls, a rear wall connecting the side walls and a top slab also connecting said side walls, the improvement comprising:

an integral transverse form [attach] *attached* to and extending across the front of said side walls and spaced from said top slab to define therewith an inlet opening to accommodate the passage of water into said catch basin, said transverse form being adapted to form, and remain in place as a water conducting surface for, a cast concrete gutter.

Re. 32,234

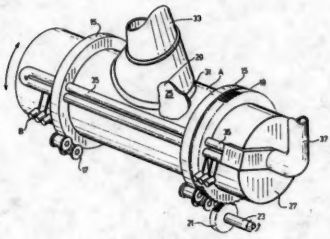
NON-FERROUS METAL TREATMENT

J. Keith Brimacombe, Vancouver, and Enrique O. Hoefele, Regina, both of Canada, assignors to Canadian Liquid Air Ltd., Montreal, Canada

Original No. 4,238,228, dated Dec. 9, 1980, Ser. No. 24,243, Mar. 27, 1979. Application for reissue Dec. 8, 1982, Ser. No. 447,805

Int. Cl.[4] C22B *15/06*

U.S. Cl. 75—76 19 Claims



1. A method of converting a bath of a nonferrous molten metal matte *and reducing the wear on the refractory and keeping the tuyeres free of blockage* in a converter vessel having an elongated sealed chamber formed by a cylindrical metallic sidewall and circular endwalls having refractory lining, the sidewall being provided with a charging port and an off-gas stack, a plurality of metallic tuyeres extending into the chamber through the sidewalls to refractory-surrounded exposed tips, means outside the vessel to supply oxidizing gas under pressure to the tuyeres, and means supporting the vessel on its horizontal axis for rotation between a charging position and a blowing position in which the tuyere tips are submerged in the bath, the process including a *batch* treatment cycle in which the vessel is initially charged with molten matte and a plurality of sequential blows carried out with the vessel being rotated back and forth between said charging and blowing positions and the gas introduced through the tuyeres or turned off accordingly for coordinated blowing, charging flux, removal of slag, *and* replenishing the charge, *over a time effective to convert the matte to the metal or the sulfide thereof,* and recovering converted metal from the vessel, comprising,

carrying out the blows, *with the vessel stationary in blowing position,* by injecting into the bath *through the tuyeres in steady unshielded streams* a total flow of [oxidizing gas] *air or air enriched with up to about 40% oxygen* effective to maintain autogenous converting temperatures within the range from about 1100° C. to about 1300° C. through [a plurality of] *from 3 to 6 submerged* spacedapart tuyeres limited in cross-sectional area and in number *at an injection pressure from about 50 to about 150 psig* effective to cause the gas *air* to enter the bath [at a pressure effective to provide discrete underexpanded steady jets] *in underexpanded condition from each tuyere as a discrete unshielded jet* which [continue] *continues* to a position remote from the tuyere [tips] *tip,* whereby wear of the refractory lining is reduced substantially to a minimum.

Re. 32,235

MAGNESIUM-CONTAINING COMPLEXES, METHOD FOR THEIR PREPARATION, AND COMPOSITIONS CONTAINING THE SAME

John H. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Original No. 4,094,801, dated Jun. 13, 1978, Ser. No. 760,315, Jan. 18, 1977. Continuation of Ser. No. 291,149, Aug. 7, 1981, abandoned, which is a continuation of Ser. No. 16,652, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 681,627, Apr. 29, 1976, abandoned. Application for reissue Apr. 18, 1983, Ser. No. 484,007

Int. Cl.[4] C10M *1/44, 1/48, 1/40, 1/24*

U.S. Cl. 252—33 35 Claims

54. A non-carbonated magnesium-containing complex in the form of a solid, grease or gel, prepared by heating, at a temperature above about 30° C. and up to about 150° C. a mixture consisting essentially of

(A) at least one of magnesium hydroxide, magnesium oxide, hydrated magnesium oxide, or magnesium alkoxide;

(B) at least one oleophilic organic reagent consisting essentially of sulfonic acid, a pentavalent phosphorus acid, or an ester or alkali metal or alkaline earth metal salt of any of these;

(C) water; and

(D) at least one organic solubilizing agent for component B: the ratio of equivalents of magnesium to component B, calculated as the free sulfonic acid or as the phosphoric acid ester, being at least about 5:1; the amount of water present being at least sufficient to hydrate a substantial proportion of component A calculated as magnesium oxide and the weight ratio of solubilizing agent D to component D to component A being at least 0.5:1.

Re 32,236

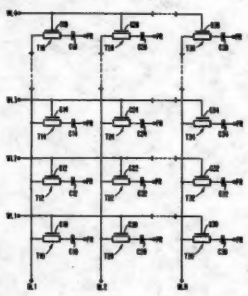
ONE DEVICE FIELD EFFECT TRANSISTOR (FET) AC STABLE RANDOM ACCESS MEMORY (RAM) ARRAY

Roy E. Scheuerlein, Sunnyvale, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,319,342, dated Mar. 9, 1982, Ser. No. 106,641, Dec. 26, 1979. Application for reissue Aug. 7, 1985, Ser. No. 763,171

Int. Cl. G11C *11/24, 11/40, 5/10*

U.S. Cl. 365—149 29 Claims



1. An integrated circuit electronic memory array having a plurality of memory cells, each memory cell of said array

having a gate region for controlling the transfer of binary information in and out of a corresponding storage region, and a bit line contact region, said array comprising:

a plurality of word lines arranged in rows each of said word lines alternately passing over the storage region of a first one of said memory cells and being electrically integral with the gate region of a second one of said memory cells; and

a plurality of bit lines arranged in columns substantially orthogonal to said word lines, memory cells being arranged along first and second parallel lines in each one of said columns;

each of said plurality of bit lines having portions extending to electrically contact memory cells arranged along said first and second parallel lines, respectively[.], *wherein each said bit line contact region is a common bit line contact region for a pair of adjacent memory cells along said plurality of bit lines.*

PLANT PATENTS

GRANTED AUGUST 26, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,787

CARNATION NAMED LONSEVA

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France

Filed May 24, 1984, Ser. No. 613,713
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. A new and distinct carnation cultivar, substantially as herein shown and described, characterized in particular by its light pink, medium sized blooms of full shape carried on rather long, stiff stems.

5,788

CARNATION NAMED LONDRINO

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France

Filed May 24, 1984, Ser. No. 613,714
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. The new and distinct variety of spray carnation, substantially as herein shown and described, characterized in particular by its small, well shaped flowers of dark pink coloration.

5,789

CARNATION NAMED LONDAISON

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France

Filed May 24, 1984, Ser. No. 613,715
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. The new and distinct spray carnation cultivar, substantially as herein shown and described, characterized in particular by its well formed but small blooms of a medium pink color which are produced profusely on intermittently blooming plants having a vigorous and tall growth habit.

5,790

ASPARAGUS FERN-SNOWFLAKE

John Filippi, Jr., 936 Cybus Way, Southampton, Pa. 18966, and H. Bruce Hellerick, P.O. Box 86 Seitz Rd., Columbia, Pa. 17512

Filed Oct. 5, 1984, Ser. No. 658,155
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of *Asparagus sprengeri,* substantially as illustrated and described, characterized by its general similarity to the common *Asparagus sprengeri,* but being distinct therefrom by (1) a marked propensity to be variegated at an early age.

PATENTS

GRANTED AUG. 26, 1986

ERRATA

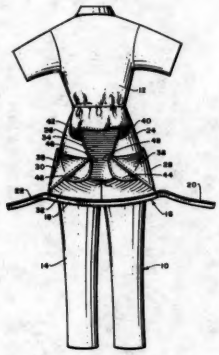
For CLASS	See PATENT NO.
130–027	4,607,480
174–042	4,607,704
384–045	4,607,893
530–414	4,608,199
530–387	4,608,200
540–529	4,608,201
530–387	4,608,203
558–179	4,608,207
369–032	4,608,676

PATENTS

GRANTED AUGUST 26, 1986

GENERAL AND MECHANICAL

4,607,396
COVERALL GARMENT WITH CONCEALED SEAT PANEL
Bonnie Craig, 2141 N. Cahuenga, Apt. #8, Los Angeles, Calif. 90068
Filed Jul. 17, 1984, Ser. No. 631,608
Int. Cl.[4] A41D *1/06, 27/20*
U.S. Cl. 2—79 **4 Claims**



1. A one-piece coverall garment having integrally formed shirt portion, pants portion and a pair of side pockets comprising;

a seat panel in said pants portion covering an opening at the rear of said pants portion;

a waistband on an upper portion of said panel for concealing said panel when said garment is being worn;

said pair of side pockets each being constructed of a front flap of material and a rear flap of material, said front flap being joined to a front portion of said pants portion, said rear flap being joined along an edge of said seat panel to form a seam; and said front and rear flaps being sewn together along a portion of one edge whereby said front and rear flaps fold together to form a pocket when said seat panel is secured with said waistband and said front and rear flaps unfold when said seat panel is released thereby providing a large comfortable opening to use while substantially completely allowing said seat panel to be concealed.

4,607,397
PORTABLE HARD HAT
Darryl E. Laxo, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Sep. 27, 1984, Ser. No. 655,392
Int. Cl.[4] A42B *1/06*
U.S. Cl. 2—410 **13 Claims**

1. A portable and collapsible hard hat for protecting the wearer against impacts, which comprises:

a base ring member having a front, back, two sides, and a curvilinear aperture located therein;

a plurality of substantially semi-circular curved segments attached to said base ring member having a first segment and a common axis for all segments;

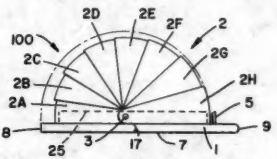
a common pivot so that each segment can rotate about said common axis, said pivot being located on each side of said base ring member;

means for interlocking each segment; and

means for locking the segments to the base ring member, comprising,

a hitch located on said first segment having a front facing protrusion;

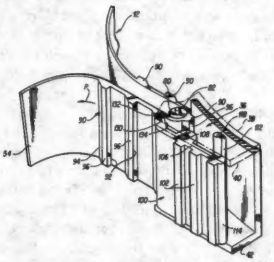
a clasp located away from said curvilinear aperture on said base ring member in an upwardly extending manner, said clasp being a cantilevered leaf spring which



has a rear-facing extension at its outer end which matches the protrusion on said hitch;

so that when the first curved segment is pivoted about said axis, the other segments will likewise follow until contact and connection with the base ring member is made.

4,607,398
STRAP AND RETAINER FOR A DIVERS MASK
Mark Faulconer, Costa Mesa, Calif., assignor to U.S.D. Corp, Santa Ana, Calif.
Filed Jul. 24, 1984, Ser. No. 633,791
Int. Cl.[4] A61F *9/02*
U.S. Cl. 2—452 **25 Claims**



1. A strap and retainer for use in securing an object to a user's body comprising:

a body portion of an object that is to be secured to a person's body;

support means extending from said body portion having a space therebetween;

a lever member pivotally connected within the space of said support means;

spring means at one end of said lever member for engaging a portion of an interior surface of the space between said support means;

tooth means distally disposed from said spring means wherein said tooth means have a first upright surface and a sloping surface extending therefrom;

means extending between said support means around which said strap can be looped;

ribs on said strap having an upright portion and a sloping portion on either side of said ribs, such that said sloping portion can engage said sloping portion of said tooth means and the upright portion can engage the upright portion of the tooth means of said lever arm under the spring pressure of said spring means; and,

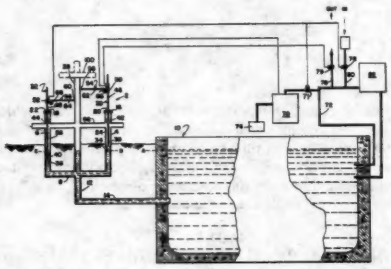
wherein said ribs and said tooth means can be mutually caused to pass each other by movement of said respective sloping surfaces of said strap and ribs passing against each other, and said tooth means of said lever arm disengaging the upright portion of said rib by movement against the force of said spring means.

4,607,399

AUTOMATIC POOL WATER REGULATOR APPARATUS

Trayan Yovanofski, 607 Johnson Dr., Ormond Beach, Fla. 32074

Filed Sep. 13, 1984, Ser. No. 650,090
Int. Cl.[4] E04H *3/18*
U.S. Cl. 4—508 **8 Claims**



1. A pool water level regulating apparatus installed adjacent a pool, the apparatus comprising:

a first vertical pipe, a second vertical pipe, a third vertical pipe positioned between the first and second vertical pipes, the first, second and third vertical pipes being interconnected with each other and the pool so that the water level of the pool corresponds to a water level in each of the first, second and third vertical pipes, a first float member axially movable inside the first vertical pipe, a second float member axially movable inside the second vertical pipe, a first bracket mounted on a side of the third vertical pipe and facing the first vertical pipe, a second bracket mounted on the opposite side of the third vertical pipe and facing the second vertical pipe and being vertically spaced above the first bracket, a first switch fixedly mounted near a distal end of the first float member, a second switch fixedly mounted near a distal end of the second float member, the first switch being electrically connected to means for increasing the water level of the pool, the second switch being electrically connected to means for decreasing the water level in the pool, the first bracket moving the first switch to an ON position when the pool level falls to a lower limit and moving the first switch to an OFF position when the pool level falls below the upper limit, wherein the first, second and third vertical pipes are assembled together from segments of plastic pipe, and the assembly is disposed in spaced relation to the pool.

4,607,400

ASSEMBLY FOR UTILIZING BILGE PUMP AS POWER WATER JET

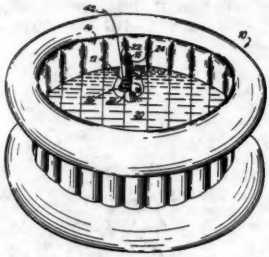
Steven Goodman, 85 Oak St., Norwood, N.J. 07648

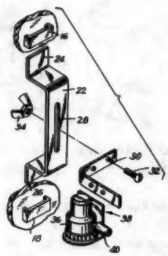
Continuation-in-part of Ser. No. 764,487, Aug. 12, 1985, Pat. No. 4,599,753. This application Feb. 21, 1986, Ser. No. 832,050
Int. Cl.[4] A61H *33/02*; E04H *3/18*
U.S. Cl. 4—541 **6 Claims**

1. In combination, mounting means for attaching a submersible bilge pump and a tub of water, said bilge pump functioning as a water jet, said mounting means comprising carrier means for carrying said bilge pump,

said bilge pump having a spout end being attached to said carrier means,

said carrier means being attached to the tub, wherein said carrier means comprises a flexible U-shaped bracket terminating in upper and lower flanges, said tub comprising spaced apart retainers connected against the inner wall of said tub, said flexible U-shaped bracket being arched to draw said flanges toward each other to be attached in said





retainers, said U-shaped bracket further comprising a vertical slot in a center portion thereof to which said bilge pump is vertically adjustably connected,

said bilge pump being attached to said carrier permitting said vertical positioning of said bilge pump at a desired level in the water,

further comprising a reducer attached to the spout of said bilge pump to enhance the jet force of the water pumped out of said bilge pump.

4,607,401

MIRRORED BED CANOPY

Terrell W. Sisson, 2425 Eliot St., Denver, Colo. 80211

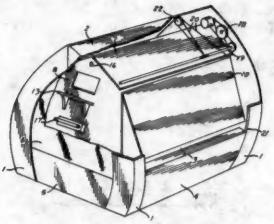
Filed Sep. 29, 1982, Ser. No. 427,496
Int. Cl.[4] A47C *29/00*
U.S. Cl. 5—414 **4 Claims**

1. Canopy apparatus adapted to surround and enclose a bed, comprising:

a plurality of mirrored panels positioned above and around the bed, at least one of said panels being angularly adjustable relative to each other and to the bed;

track means positioned a spaced distance upwardly from said bed for moveably supporting one of said panels in such a manner that said track supported mirror is move-

able laterally in relation to said bed and to said other panels; and



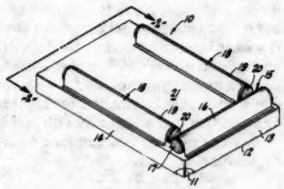
at least one mirrored panel having a cut-out portion adapted to have positioned adjacent thereto a visual image producing device visible and observable from the bed.

4,607,402

RETAINER SHEET

Dianne J. Pollard, 105 Bishop Ct., Novato, Calif. 94947

Filed Apr. 15, 1985, Ser. No. 723,109
Int. Cl.[4] A47C *21/08*
U.S. Cl. 5—425 5 Claims



1. A retainer sheet for covering the top surface of a base such as a mattress and for preventing a person or object resting on the mattress from falling off, the retainer sheet comprising:

a sheet of flexible material;

a plurality of elongated retainers attached to the peripheral area of the sheet in the region thereof corresponding to the top surface of the base and defining a generally U-shaped restraint about a rest area of the sheet, a first one of the retainers forming the base of the U-shaped restraint for providing a foot or head restraint and the second and third ones of the retainers forming the sides of the U-shaped restraint for providing restraints along the length of the sheet and mattress;

each retainer comprising a relatively narrow elongated strip of flexible material which is attached to the base sheet along the length of the strip to thereby define a pocket, and a relatively rigid cylinder of plastic resin material sized for removable insertion into the associated pocket; and

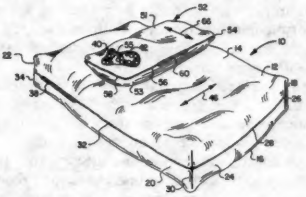
the combination of the sheet material, the resin material and the relative cross-sectional area of the cylinder and of the pockets providing friction between the cylinder and the pocket material which permits insertion and removal of the cylinder into the pocket yet retains the cylinder when in the pocket.

4,607,403

INFANT SUPPORT PADS

Margaret A. Alivizatos, 11056 Shady Trail, Suite 113, Dallas, Tex. 75229

Filed Sep. 14, 1984, Ser. No. 650,800
Int. Cl.[4] A47C *27/14*; A47D *7/00*; A61G *7/04*
U.S. Cl. 5—449 12 Claims



1. An infant support pad for supporting infants which lack voluntary muscle tone, comprising:

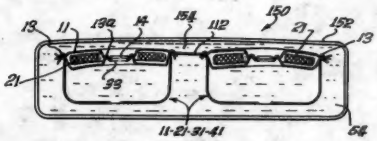
a single infant sized three dimensional rectangular flexible fabric cover comprising top, bottom, side and end panels, forming a closed interior chamber, said chamber being partially filled from about 50% to about 70% of its maximum volume with generally spherical resilient plastic beads formed from expanded cellular plastic expanded to a diameter in the range of about 0.062 inches to 0.188 inches, to form substantially liquid impermeable fill for said pad and to provide a firm yet yieldable support surface which conforms to the contour of the infants body to distribute support forces uniformly thereover.

4,607,404

WATERBED FLOAT WITH ANTIWAVE BAFFLE AND COLLAPSE-RETARDING FIBER INSERT

Richard Fraige, 11005 Highway 50 East, Carson City, Nev. 89701

Continuation-in-part of Ser. No. 535,619, Sep. 26, 1983, Pat. No. 4,523,343, which is a continuation-in-part of Ser. No. 337,122, Jan. 5, 1982, Pat. No. 4,481,248. This application Jul. 13, 1984, Ser. No. 630,886
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—450 8 Claims



1. In a noninsulating combination, for use within a waterbed mattress or the like to reduce wave motion of water therein while maintaining heat flow from the bottom to the top thereof:

a fibrous product comprising a large multiplicity of interbonded fibers;

a first sheeting structure that forms a baffle for reducing such wave motion by partially impeding movement of such water within the mattress;

the baffle being shaped to define an extended bottom panel of an enclosure for occupancy by some of such water;

the baffle being further shaped to define side panels of the enclosure, said side panels being substantially continuous with the extended bottom panel;

a horizontal dimension of the baffle being at least twice the height of the baffle;

the baffle having first hole means formed therein for passage

of such water into and out from said enclosure so that such water occupying the enclosure is not completely confined within said enclosure but can circulate into and out from said enclosure;

the first hole means constituting in area substantially less than ten percent of the area of the horizontal portion of the baffle, but nevertheless being amply sized to facilitate sufficient water circulation by convection through the baffle to prevent the baffle from thermally insulating the top of the mattress from the bottom;

the baffle further having apertures defined in diagonally opposite lower corners thereof;

a second sheeting structure that entirely encloses the fibrous product and that forms a sealed gas space, the fibrous product being inside the gas space and tending to prevent the sealed gas space from collapsing; and

means for constraining the second sheeting structure in close proximity to the baffle, so that the second sheeting structure with its sealed gas space can by its buoyancy support the baffle and can form the top of said enclosures for occupancy by such water;

the second sheeting structure defining sealed second hole means for communication of space above the second sheeting structure with space below the second sheeting structure, the second hole means being disposed generally within a central expanse of the second sheeting structure and being amply sized to facilitate sufficient water circulation by convection through the second sheeting structure to prevent the second sheeting structure from thermally insulating the top of the mattress from the bottom;

whereby such water within such mattress of the like, when it fills the space in and around the sheeting structures and the constraining means, can circulate through the hole means and through the baffle and thereby promote temperature equalization of such water above and below the baffle by convection;

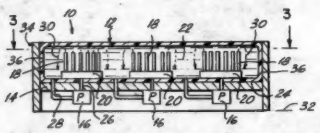
a part of the second sheeting structure being laterally extended as a bridging member to at least one other like combination as defined in all the foregoing paragraphs of this claim.

4,607,405

JET STREAM WATER BED

Linda N. Ellis, and George Spector, both of 233 Broadway, Rm 3615, New York, N.Y. 10007

Filed Aug. 19, 1985, Ser. No. 766,985
Int. Cl.[4] A61G 7/04
U.S. Cl. 5—451 **4 Claims**



1. A jet stream water bed comprising:

(a) a mattress being a fluid-filled sealed container;

(b) a rigid support member positioned in contact with bottom of said mattress;

(c) a water pump having an inlet pipe and an outlet pipe, said pump positioned in contact with bottom of said support member so that said inlet pipe and said outlet pipe will extend through said support member and through said bottom of said mattress; and

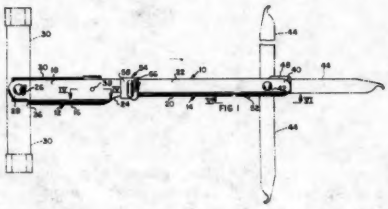
(d) a plurality of flexible water tubes in a circular ring, said ring of water tubes positioned within said mattress to fluidly connect to said inlet pipe of said pump so that when said pump is activated a person on said mattress can be massaged by jet streams of water coming from said ring of water tubes.

4,607,406

COMBINATION AUTOMOBILE FOLDING TOOL

Robert D. Davis, Jr., Jackson, Mich., assignor to Ryerson & Haynes, Inc., Jackson, Mich.

Filed Jul. 29, 1985, Ser. No. 760,047
Int. Cl.[4] B25F 1/00
U.S. Cl. 7—100 **11 Claims**



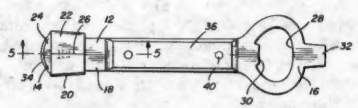
1. A combination automobile tool comprising, in combination, an elongated body of U transverse cross section defined by a base and spaced parallel legs depending from said base, said body including an elongated first end region terminating in a first end and an elongated second end region terminating in a second end, a first pivot pin mounted upon said first end extending between said legs, an elongated handle pivotally mounted upon said first pivot pin movable between a storage position wherein said handle is stored between the legs of said first end region, an extension position wherein said handle is in alignment with the length of said body and a crank position wherein said handle is transversely disposed to the length of said body, a second pivot pin mounted upon said second end extending between said legs, an elongated tubular socket having an inner end pivotally mounted upon said second pivot pin and an outer end, nut engaging flats defined upon said socket outer end, said socket being pivotal between a storage position wherein said socket is stored between the legs of said second end region and a use position wherein said socket outer end is accessible for attachment to a nut, and a lock slide movably mounted on said body first end region for movement toward and away from said first end engagable with said handle when said handle is in said extension position locking said handle in said extension position.

4,607,407

CAN TAB OPENER

Josef J. Bergmeister, P.O. Box 421713, San Francisco, Calif. 94142

Filed Jun. 17, 1985, Ser. No. 745,089
Int. Cl.[4] B67B 7/44
U.S. Cl. 7—156 **7 Claims**



1. A lift-top can opener including an elongated lever member defining first and second ends, said lever member comprising a flat stock member and said ends each being of greater width than the intermediate length portion of said flat stock member extending between and connecting said ends, said ends each including opposite side portions projecting outwardly beyond the corresponding opposite side portions of said intermediate length portion, the opposite side portions of one of said greater width ends being reversely bent back over one face surface of the corresponding end of said flat stock member in closely laterally spaced relation relative thereto and with the free ends of said reversely beat portions secured

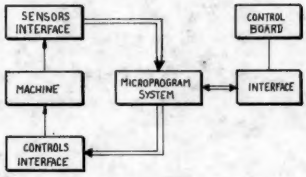
together to form an open ended sleeve on the side of said one end opposed by said reversely bent portions, said one greater width end including a bevelled arcuate edge equipped extension projecting slightly outwardly beyond said opposite side portions, said sleeve tapering in width, measured transversely of said one face toward the other end of said lever member.

4,607,408

METHOD FOR DETERMINING A MOMENT OF INERTIA OF CLOTHES IN A WASHING AND/OR DRYING MACHINE

Laurent Didier, La Roche sur Yon, and Jean C. Geay, St. Florent des Bois, both of France, assignors to Es swein S.A., Courheaoie, France

Filed Oct. 22, 1984, Ser. No. 663,695
Claims priority, application France, Oct. 25, 1983, 83 16997
Int. Cl.[4] D06F *33/02*
U.S. Cl. 8—159 7 Claims



1. A process for determining the load of clothes in a rotating drum of one of: (a) a clothes washing and (b) a clothes drying machine, comprising the steps of:

rotating said drum; and

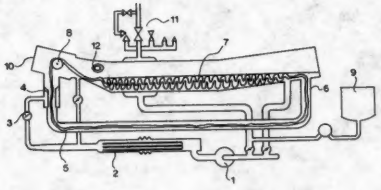
determining the moment of inertia of said clothes in said rotating drum thereby obtaining loading data on said load of clothes.

4,607,409

METHOD AND APPARATUS FOR PROCESSING TEXTILES

Sumio Hishimuma, Shiga, and Katsuo Kanno, Otsu, both of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 523,275, Aug. 15, 1983, abandoned.
This application Mar. 28, 1985, Ser. No. 716,925
Claims priority, application Japan, Aug. 16, 1982, 57-141023; Mar. 11, 1983, 58-42663; Mar. 18, 1983, 58-44466
Int. Cl.[4] D06B *3/28, 23/00*
U.S. Cl. 8—152 14 Claims



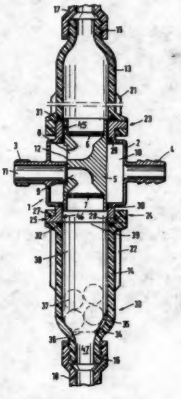
1. A method for processing textiles comprising passing said textile through a cylindrical tube, the inner wall of which comprises abrasive particles thereby forming an abrasive surface, with a flowing liquid under conditions such that said textile is brought into contact with said abrasive surface while moving through said tube to thereby raise or shear said textile by said abrasive surface.

4,607,410

APPARATUS FOR CLEANING PIPELINES FOR BEVERAGES AND THE LIKE

Friedrich Bersch, Industriestrasse 18, D-5401 Halsenbach, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 684,452
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347004
Int. Cl.[4] B08B *9/02*
U.S. Cl. 15—3.51 17 Claims



1. Apparatus for cleaning by means of a liquid cleaning agent and discrete cleaning elements in the form of sponges or the like a pipeline of the type having two ends with a predetermined inner diamter, comprising a four-way reversing valve including a body having an inlet for fresh cleaning agent, an outlet for spent cleaning agent and two ports arranged to communicate with the ends of the pipeline, and a piston reciprocable in said body between a first position in which said inlet and said outlet respectively communicate with one and the other of said ports and a second position in which said inlet and said outlet respectively communicate with said other and said one port; a housing including a first end portion with an inner diameter larger than, and a second end portion with an inner diameter closer to, said predetermined diameter, said first end portion of said housing being disposed at a level above said second end portion; a shutoff valve for selectively sealing and opening said second end portion so that supply of cleaning elements which are confined in said housing can be submerged in a liquid medium, particularly a sterilizing liquid, by admitting such medium through the first end portion while the shutoff valve seals the second end portion of said housing; and manually operated quick-release measn for releasably coupling the first end portion of said housing directly to said body so that the interior of the housing communicates with one of said ports in engaged condition of said coupling means and that said piston is accessible, in one of said first and second positions thereof, is disengaged condition of said coupling means, said second end portion being connectable with one end of the pipeline.

4,607,411

MOLDED BRUSH BLOCK WITH INTEGRAL SQUEEGEE

John C. Lewis, Jr., Forest Dale, Vt., assignor to Tucel Industries, Inc., Forest Dale, Vt.

Filed Feb. 28, 1985, Ser. No. 706,957
Int. Cl.[4] A47L *13/11, 13/12*
U.S. Cl. 15—117 8 Claims

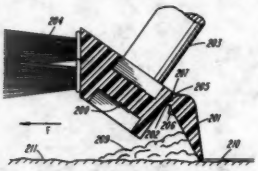
1. An integrally molded block and squeegee blade for use as a push broom and coater combination comprising:

a thermoplastic molded base block having a face thereon

adapted to mount brush tufts to form a tufted surface on said face;

a blade member having a predetermined cross-section disposed along the length of said brush block;

integral hinge connector means connecting said blade member and said block along the length of said block for permitting pivotal movement of said blade member relative to said block;



stop means mounted on said blade member for engaging said block so that when said blade member pivots relative to said block it will pivot through a predetermined arc until said stop means engages said block against further pivotal movement; and

means for mounting a handle on said block.

4,607,412

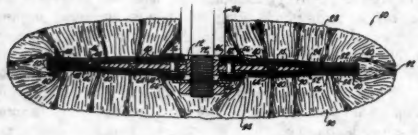
REVERSIBLE BUFFING PAD AND METHOD OF MANUFACTURE

Lewis A. Ashworth, 2633 N. Canal, Orange, Calif. 92665

Filed Mar. 25, 1985, Ser. No. 715,337

Int. Cl.⁴ B24D *13/14, 13/20*

U.S. Cl. 15—230.18 **18 Claims**



1. A buffing pad comprising:

a hub having means for releasably attaching said hub to a drive shaft, said means enabling attachment to said drive shaft from either of two sides of said hub;

a heat processable center disk;

means for mounting said hub coaxially with said heat processable center disk;

a pair of buffing disks each having a plurality of yarn tufts protruding from a first side thereof and a plurality of yarn stitches exposed on a second side thereof, said plurality of yarn tufts being of sufficient number and density to provide a buffing nap on the first side of each buffing disk; and,

means for securing said stitches in said buffing disks, coaxially securing said center disk between the second sides of the buffing disks, and securing the second sides of the buffing disk together to form a buffing pad with the two tufted first sides of the buffing disks facing outwardly from one another, said last mentioned means including fusible material means for combining with said heat processable center disk.

4,607,413

WORK STATION WITH SUCTIONING DEVICE

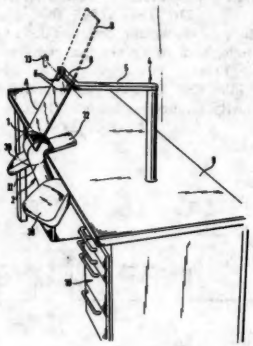
Helmut Schmidt; Anton Bodenmiller, both of Leutkirch, and Alfred Straka, Isny, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 1, 1984, Ser. No. 667,261

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339658

Int. Cl.⁴ A47L *5/38*

U.S. Cl. 15—301 **59 Claims**



1. In a work station including a suctioning device with a suction opening for the aspiration of suctionable material produced during the processing of workpieces, and a protective plate for guiding the suctionable material into the suction opening, the improvement comprising:

mounting and support means, separate from the suctioning device, supporting and protective plate independent of the suctioning device for movement between a first position for guiding the suctionable material into the suction opening, and a second position spaced from the suctioning device.

4,607,414

DEVICE FOR TYING AN ELONGATE OBJECT, FOR EXAMPLE A CABLE TRUNK

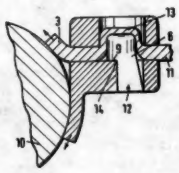
Jörg Six, Norderstedt, Fed. Rep. of Germany, assignor to Paul Hellermann GmbH, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 650,434

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 8327158[U]

Int. Cl.⁴ B65D *63/00*

U.S. Cl. 24—16 PB **14 Claims**



6. In combination,

an elongated object to be tied, and

a tying device comprising

a band having opposite ends and wrapped around said object so as to be under tension, and

a lock assembly connecting the band ends comprising

a lock body positioned adjacent said object having a band-

receiving passageway, a borehole with upper and lower portions extending transversely through said passageway so that said upper portion is above said passageway and said lower portion is below said passageway, and a first step surface adjacent said lower portion of said borehole and disposed toward said object, said first step surface facing upwardly toward said upper portion of said borehole, one of said band ends extending through said passageway, and

a driving pin having upper and lower ends mounted within the upper and lower portions respectively of said borehole with said upper end engaging said one band end to form a deep-drawn pot-shaped configuration of said one band end about said upper end of said pin, with the tension of said one band end exerting a force on said pin downwardly and toward said object,

said pin having a second step surface disposed toward said object and facing downwardly, said second step surface directly engaging said first step surface of said lock body to retain said pin in said borehole,

said force on said pin from said one band end urging said pin toward said object so as to tend to increase the amount of mutual engagement between said first and second step surfaces and to press said second step surface directly against said first step surface.

4,607,415
BUTTON FOR GARMENT

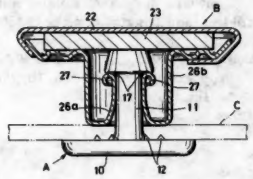
Takeo Fukuroi, Uozu, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1984, Ser. No. 671,938

Claims priority, application Japan, Nov. 16, 1983, 58-176967[U]

Int. Cl.⁴ A44B *1/42*

U.S. Cl. 24—94 **24 Claims**



1. A button for attachment to a garment fabric, comprising:

(a) a capped button body including a hollow hub having a flanged free end;

(b) a tack member having a head and a shank projecting perpendicularly and centrally from said head for being forced through the garment fabric into said hollow hub of said button body to thereby join said tack member with said button body, said shank including

(1) a cylindrical stem contiguous to said head,

(2) an end portion extending coaxially from said stem, and

(3) a cold-pressed recessed portion disposed circumferentially in said stem adjacent to said end portion and having a stiffness greater than the other portion of said shank, said recessed portion being disposed in such a position that the same is disposed adjacent to said flanged free end of said hollow hub when said shank is fully inserted through said hollow hub with the garment fabric sandwiched between said hollow hub and said head of said tack member, said end portion being plastically deformable about said recessed portion into an axially compressed and radially uniformly swelled configuration when said shank is forced into said button body.

4,607,416
FLUID-TIGHT SLIDE FASTENER

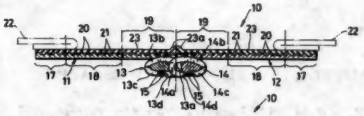
Koichi Tanikawa, Toyama, and Toshiaki Takizawa, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 1, 1985, Ser. No. 729,403

Claims priority, application Japan, May 10, 1984, 59-68414[U]

Int. Cl.⁴ A44B *19/02, 19/32*

U.S. Cl. 24—389 **9 Claims**



1. A fluid-tight slide fastener comprising:

(a) a pair of stringer tapes each having an inner edge region, an intermediate region and an outer edge region, said tape incorporating stretchable threads in said intermediate region to render this region stretchable transversely of said tape, and said inner and outer edge regions both being non-stretchable;

(b) a pair of rows of coupling elements secured to the inner edge regions of the respective tapes;

(c) a slider for taking said rows of coupling elements into an out of engagement with each other; and

(d) a pair of elastically deformable sealing strips secured respectively onto one side of each of said tapes remotely from said coupling elements, said sealing strip having a width substantially coextensive with the width of said tape, but having an inner edge projecting in its free state slightly beyond the inner longitudinal edge of said inner edge region of said tape.

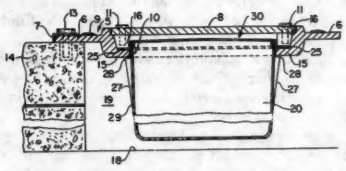
4,607,417
STORAGE SYSTEM FOR CREMATED REMAINS

John P. Hancovsky, McMurray, Pa., assignor to Matthews International Corporation, Pittsburgh, Pa.

Filed Nov. 21, 1983, Ser. No. 553,747

Int. Cl.⁴ A61G *17/08;* E04H *13/00*

U.S. Cl. 27—1 **8 Claims**



1. A storage system for cremated remains comprising a generally flat niche plate having a plurality of openings therein and a plurality of scroll plates for individually covering each of said openings, the storage system including sidewalls for supporting the niche plate along its outer periphery and means for securing the niche plate to said sidewalls in spaced relationship from an inner surface extending between the sidewalls, said niche plate, sidewalls and inner surface defining an interment repository therewithin, said niche plate including a recessed flanged portion within each of the niche openings and a recessed ledge spaced above each of said flanged portions to receive one of said scroll plates thereon; the storage system further comprising an urn-like canister having resilient sidewalls, a closed bottom end and a continuous, open top edge, having a transverse cross-sectional shape substantially the same as each of said niche plate openings, said canister including lid means for closing-off said top edge, said canister further

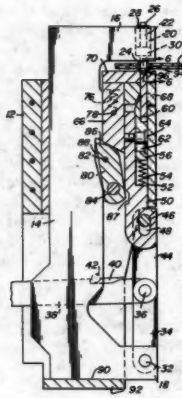
including outwardly projecting flange means formed around the periphery thereof in spaced relationship to the top edge thereof and further including a plurality of locking tab means formed on the sidewalls of the canister, each having a shoulder portion in spaced relationship from the canister flange means, said spacing being approximately equal to the thickness of the niche plate flange, whereby, when said canister is inserted into a niche plate opening to a predetermined depth within the interment repository, the canister flange means and the shoulders of the locking tab means bear against opposing surfaces of the niche plate flange to lockably secure said canister within the niche plate.

4,607,418

MEANS FOR INTERLOCKING OVERLAPPING SHEET MATERIAL

Otto P. Hafner, 1321 Paddock Way, Cherry Hill, N.J. 08034

Filed Nov. 18, 1983, Ser. No. 553,140
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—21.1 **17 Claims**



1. Apparatus for forming interlocking joints between superimposed sheets of deformable material comprising

a movable punch holder having a shearing and deforming punch extending therefrom,

a die in opposed relation to said punch, said die being adapted to support said superimposed sheets of deformable material and having an aperture therein in aligned relation to said punch,

a movable anvil within said aperture,

means for moving said punch holder in one direction for moving said punch against said superimposed sheets while supported by said die, said punch being constructed and arranged to exert pressure against corresponding portions of said sheets to shear and deform said portions into said aperture upon movement of said punch holder in said one direction,

means for moving said anvil towards and within said aperture in a "direction opposite" from said one direction of punch movement;

means operatively connected to said die to move said die away from said punch in response to anvil movement in said opposite direction past a predetermined point,

whereby one of the displaced portions becomes positioned above said aperture while the other of said portions remains within said aperture, said anvil moving means then moving said anvil against said displaced sheared and deformed portions whereby opposed pressure of said punch and anvil causes the displaced portion above said aperture to expand against the corresponding surface of the adjacent sheet.

8. Apparatus for forming interlocking joints between superimposed sheets of deformable material by affecting relative movement between a punch and said superimposed sheets while said sheets facingly contact an apertured die aligned with said punch to shear and deform by punch-displacing superimposed sheet portions into said die aperture, with relative movement between said die and said displaced sheet portions exposing part of said displaced sheet portions outwardly of said aperture, with compression of said displaced sheet portions between an anvil and said punch laterally spreading said exposed part of said displaced sheet portions over a surface of the superimposed sheets adjacent said die, comprising:

(a) a movable punch holder having a shearing and deforming punch extending therefrom,

(b) a die in opposed relation to said punch,

(c) said die being adapted to support said superimposed sheets of deformable materials and having an aperture in aligned relation to said punch, an anvil movable within said aperture,

(d) means for pressing together said punch and said superimposed sheets facingly contacting said die, thereby shear and deform by punch-displacing portions of said sheets into said die aperture,

(e) means for moving said anvil toward said punch and into said aperture to sandwich said displaced sheet portions in said aperture between said anvil and said punch;

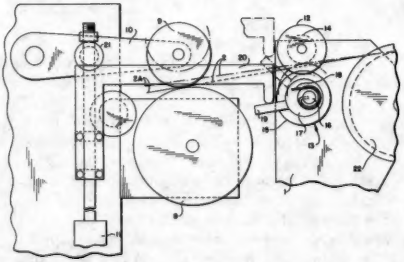
(f) means, responsive to anvil movement, for moving said die with respect to said sandwiched displaced sheet portions and exposing at least some of said sandwiched displaced sheet portions out of said aperture for spreading thereof over a surface of said superimposed sheets in response to force exerted between said punch and said anvil on said sandwiched displaced sheet portions.

4,607,419

ALTERNATOR APPARATUS

Gustav Köhler, Blomvägen 3; Mikael Köhler, Skräddaregatan 39, and Ulf Köhler, Industrigatan 4, all of S-430 10 Tvååker, Sweden

Filed Jan. 2, 1985, Ser. No. 688,392
Claims priority, application Sweden, Jan. 10, 1984, 8400094
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—24.5 **13 Claims**



1. An alternator apparatus for selectively feeding a slat belt to the infeed section of a machine for manufacturing venetian blinds having a plurality of slat belts, said alternator apparatus comprising

a magazine disposed at the infeed section of said machine,

a plurality of slat belt rolls supported by said magazine for supplying a slat belt to said infeed section from each of said rolls,

means for selecting one of said slat belt rolls for supplying a slat belt to said infeed section,

and means for reciprocally moving said magazine transversely of said infeed section to supply said slat belt from said selected slat belt roll to said infeed section of said machine.

4,607,420

ROLLER FOR A MACHINE FOR MANUFACTURING ENDLESS TAPE MATERIAL

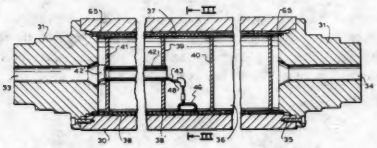
Erich Vomhoff, Königsbronn, Fed. Rep. of Germany, assignor to Schwäbische Hüttenwerke GmbH, Aalen-Wasseralfingen, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,123

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1983, 3304076

Int. Cl.⁴ B21B *31/32*; B60B *9/00*

U.S. Cl. 29—113 R **11 Claims**



1. An elongated heatable roller for a machine for manufacturing endless tape material, such as paper machine, foil-pulling calender or the like, comprising an outer cylindrical sleeve having a finished outer surface and a finished inner surface; an inner cylindrical displacement member having an inner surface and an outer surface and being centrally positioned in said sleeve so that a clearance is formed between said outer sleeve and the outer surface of said displacement member for passing through said clearance a heat-conducting fluid; two trunnions rigidly connected to said sleeve and each having a through passage communicating with said clearance, the through passage of one of said trunnions being an inlet passage for the heat-conducting fluid and the through passage of another of said trunnions being an outlet passage for the heat-conducting fluid, said sleeve having two ends at which the sleeve is dynamically balanced; and additional imbalance-compensating masses for compensating for imbalanace occurring on said sleeve at a distance from said ends and for various heat expansions of said sleeve, causing deflection of said sleeve, said imbalance-compensating means being rigidly attached to the inner surface of said displacement member in the middle area thereof.

4,607,421

METHOD AND APPARATUS FOR DETERMINING SPRING PRELOADING IN A FLUID HANDLING DEVICE

Thomas G. Zemek, Mansfield; Antonio B. Caruolo, Vernon, both of Conn.; Stephanie A. Roberts; James K. Dunn, both of Columbia, S.C., and John Spearen, Irmo, S.C., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 2, 1985, Ser. No. 751,712

Int. Cl.⁴ B21D *53/00*; B23Q *15/00*; B23P *21/00*; G01L *25/00*

U.S. Cl. 29—157.1 R **9 Claims**

1. In a method for assembling a fluid handling apparatus including a valve comprising a movable valve element and a seat mating therewith, said valve element being openable from engagement with said seat against the closing force of a spring at a select critical valve opening fluid pressure applied to said valve element for the passage of said fluid through said valve, a method for determining the preloading of said spring required to maintain said valve in a closed condition at fluid pressures less than said critical opening pressure, said method being characterized by the steps of:

assembling said spring with said valve element such that said spring maintains said valve element closed against opening forces applied thereto by a fluid;

establishing said opening pressure in said fluid;

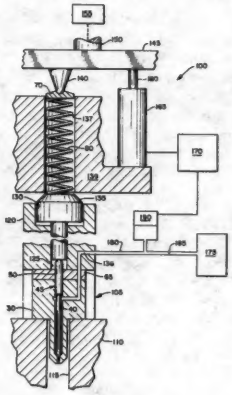
biasing said spring in a valve closing direction with a force of a magnitude in excess of that corresponding to said opening pressure;

gradually relieving said bias from said spring until said opening pressure causes said valve to open;

measuring the change in dimension of said spring resulting from said bias relief thereon prior to said valve opening; and

computing the change in dimension of said spring required to effect a closing of said valve at fluid pressures less than said critical opening pressure from the dimensions of said spring in unbiased and fully biased conditions and the change in dimension of said spring resulting from said relief of said bias prior to said valve opening.

5. In the automated assembly of a fluid handling apparatus including a valve comprising a movable valve element and a seat mating therewith, said valve element being openable from engagement with said seat against the closing force of a spring at a select valve critical opening fluid pressure applied to said valve element for the passage of said fluid through said valve,



apparatus for establishing the length of said spring required to maintain said valve in a closed condition at fluid pressures less than said opening pressure, said apparatus being characterized by:

means for operatively connecting said spring with said valve element such that said spring maintains said valve element closed against opening forces applied thereto by a fluid;

means for biasing said spring in a valve closing direction with a force of a magnitude in excess of that corresponding to said opening pressure and gradually relieving said bias from said spring as said spring pressure is maintained on said valve element;

means for detecting an opening of said valve by said fluid when said bias has been sufficiently relieved; and

means for determining the change in dimension of said spring as said bias is relieved therefrom prior to said opening of said valve,

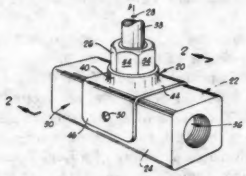
whereby the change in dimension of said spring required to effect a closing of said valve in said fluid handling apparatus at operating pressures less than said critical opening pressure is readily computable from the dimension of said spring in unbiased and fully biased conditions and said change in spring dimension due to said relief of said bias prior to said valve opening.

4,607,422

METHOD FOR LOCKING A BONNET TO A VALVE BODY

John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Division of Ser. No. 334,425, Dec. 24, 1981, Pat. No. 4,452,428.
This application Feb. 3, 1984, Ser. No. 576,948
Int. Cl.[4] B21D *53/00, 39/03;* F16B *39/00, 39/10*
U.S. Cl. 29—157.1 R 13 Claims



1. A method for fixing a bonnet to a valve body into which the bonnet screws between opposed sides of the valve body, said bonnet having a plurality of angularly related facets formed thereon parallel to the screw axis of the bonnet into the valve body, comprising the steps of:

engaging one portion of a sheet metal structure with the sides of the valve body so as to fix the position of the sheet metal structure with respect to the valve body; and then

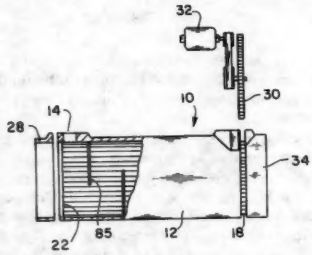
deforming one other portion of the sheet metal structure to engage the facets on the bonnet whereby the sheet metal structure prevents relative movement of the bonnet about the screw axis of the bonnet into the valve body after said deformation.

4,607,423

METHOD FOR MANUFACTURING A DISASSEMBLEABLE CORE HEAT EXCHANGER

Robert E. Sleep, Jr., 4304 Autumn Leaves Dr., Tampa, Fla. 33624

Continuation-in-part of Ser. No. 503,619, Jun. 13, 1983. This application Nov. 21, 1984, Ser. No. 673,680
Int. Cl.[4] B21D *53/02;* B23P *6/00*
U.S. Cl. 29—157.3 R 16 Claims



1. A method of manufacturing a disassembleable core heat exchanger which is interposed between a first and second fluid coupling and of the type including an elongated housing having a first and second flow port and having core tubes positioned within a bore of the housing and a first and second tube retaining plate sealed at opposite ends of the core tubes to enable a first fluid path and a second fluid path within the housing comprising the steps of:

cutting both ends of the elongated housing in the vicinity of the tube retaining plates;

circumferentially cutting the first and second tube retaining plates to enable the core tubes to be removable from the housing;

removing the core tubes from the housing;

securing in a fluid tight manner a first flange having a central aperture corresponding to the diameter of the cut first tube retaining plate to the first tube retaining plate;

securing in a fluid tight manner a ring around the periphery of the second tube retaining plate such that the ring protrudes relative the elongate housing to provide a sealing surface;

slipping a first gasket over the core tubes;

sliding the second tube retaining plate and ring back into the housing to enable the housing to engage the gasket and first flange and with the ring protruding relative the housing;

passing an O-ring seal over the protruding end of the ring so that the O-ring seal encircles the ring;

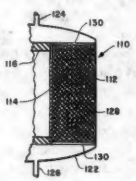
positioning a locating plate adjacent to the O-ring seal to enable the housing to sealingly engage the first and second coupling to enable a first flow path between the first and second housing ports for the first fluid independent of a second flow path between the first and second coupling for the second fluid upon sealingly affixing the disassembleable core heat exchanger to the first and second coupling.

4,607,424

THERMAL REGENERATOR

Alfred L. Johnson, Manhattan Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 12, 1985, Ser. No. 710,840
Int. Cl.[4] B23P *15/26, 17/00*
U.S. Cl. 29—157.3 R 5 Claims



1. A process for fabricating a thermal regenerator which comprises the steps of:

(a) providing a first composite woven structure consisting of a plurality of parallel, longitudinally oriented, spaced apart thermal members for storage and transfer of heat, a plurality of parallel, transversely oriented, spaced apart heat-resisting cords woven through said thermal members, and means for maintaining said thermal members in said parallel relation;

(b) winding said composite structure spirally around a cylindrical mandrel, thereby providing a wound structure;

(c) disposing the resulting wound structure in a regenerator housing, said housing comprising an outer wall, a central cylindrical core having closed ends, a first end closure means, a second end closure means, a first fluid transfer means in operable communication with said first end closure means, and a second fluid transfer means in operable communication with said second end closure means, whereby a fluid may be transferred from one of said fluid transfer means through said wound structure disposed in said housing to the other of said fluid transfer means; and,

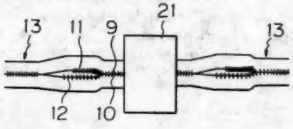
(d) removing said maintaining means.

4,607,425

CURVED SLIDE FASTENER CHAIN AND METHOD FOR PRODUCING CURVED SLIDE FASTENER

Akinobu Terasawa, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,094
Claims priority, application Japan, Dec. 3, 1982, 57-213020; Dec. 16, 1982, 57-190807[U]
Int. Cl.[4] B21D *53/50*
U.S. Cl. 29—408 1 Claim



1. A method for producing a curved slide fastener including a pair of element rows each having straight and curved inter-engagement portions comprising the steps of:

forming fastener stringers by planting a plurality of element rows of a predetermined length on each of the fastener tapes of the fastener stringers in series and spaced relation;

inter-engaging a pair of fastener stringers to form a fastener chain;

washing and dewatering said fastener chain and drying the same while applying tension thereto;

finishing said fastener chain to form slide fasteners by cutting said slide fastener chain into a unit length after applying parts, such as sliders, to said fastener chain;

characterized in that:

(a) in the step of forming fastener stringers, a pair of fastener stringers are so formed simultaneously that the fastener elements constituting straight and curved inter-engagement portions are planted on each of the inner side edges of said fastener tapes with the element pitch in the curved inter-engagement portion of one of the pair of fastener stringers being larger than the element pitch in the curved inter-engagement portion of the other of the pair of fastener stringers;

(b) in the step of inter-engaging the pair of fastener stringers, the pair of fastener stringers are inter-engaged to form a fastener chain in which at least most of said curved inter-engagement portions are dis-inter-engaged; and

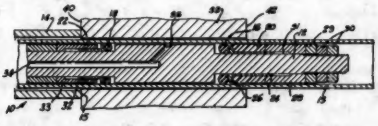
(c) in the step of washing, dewatering and drying the fastener chain, said fastener chain is processed with the curved inter-engagement portions being at least party not inter-engaged.

4,607,426

SWAGING METHOD AND APPARATUS FOR AXIALLY EXTENDED EXPANSION OF TUBES

John W. Kelly, Burbank, Calif., assignor to Haskel, Inc., Burbank, Calif.

Filed Aug. 5, 1985, Ser. No. 762,258
Int. Cl.[4] B23D *17/00, 15/26;* B21D *39/08*
U.S. Cl. 29—421 R 17 Claims



1. A method for expanding and anchoring a tube within a surrounding structure to form a joint, said method comprising the steps of:

inserting said tube in a bore in said surrounding structure so that an external portion of said tube extends from said surrounding structure;

inserting a swaging mandrel in said tube, said mandrel defining a hydraulic pressure zone axially bounded by first and second seal members and an elastomeric member disposed adjacent to said first seal member;

positioning said mandrel axially within said tube so that said hydraulic pressure zone is disposed within said surrounding structure and said elastomeric member is at least partially disposed within said external portion;

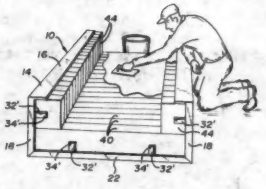
introducing a pressurized fluid into said hydraulic pressure zone between said mandrel and said tube, and thus (1) causing said tube to expand radially within said hydraulic pressure zone, (2) applying an axial compressive force to said elastomeric member and thereby causing said elastomeric member to exert a radial expansive force on said tube, and (3) causing said tube to permanently deform outwardly beyond the diameter of said bore, thereby interlocking said tube with said surrounding structure and insuring a tight visually verifiable leak proof joint extending to the surface of said surrounding structure.

4,607,427

RUNNER COVERS

Hartzell D. Scofield, Highland, Ind., assignor to Crisman Sand Company, Inc., Portage, Ind.

Continuation of Ser. No. 579,818, Feb. 13, 1984, abandoned.
This application Jun. 13, 1985, Ser. No. 733,106
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—432 2 Claims



1. The process of making a selfsupporting portable unitary runner cover comprising the steps of, in sequence:

forming a rectilinear exoskeleton framework of linear steel members said framework providing rigidity and support to the cover;

providing walls of expanded metal sized to span between the steel members;

welding the expanded metal walls to the members about the wall peripheries;

affixing L-shaped hangars to the frame or walls and impaling ceramic batting thereon so as to form a thickness interior of such insulation over the entire interior of the runner cover; and

applying a sealing coat of ceramic insulation to the interior and allowing it to dry.

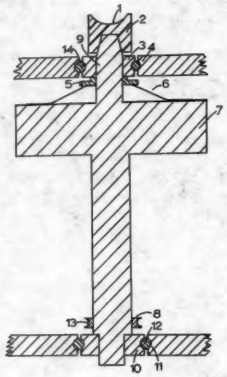
4,607,428
METHOD FOR PRELOADING BEARINGS FOR A SPIN CASTING APPARATUS

Charles W. Neefe, Box 361 811 Scurry St., and Don R. Proctor, P.O. Box 429, both of, Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 642,114, Aug. 17, 1984, Pat. No. 4,534,915, which is a continuation-in-part of Ser. No. 506,873, Jul. 5, 1983, abandoned, which is a continuation-in-part of Ser. No. 417,641, Sep. 9, 1982, Pat. No. 4,416,837. This application Jun. 10, 1985, Ser. No. 742,949

Int. Cl.[4] B23P *11/00*

U.S. Cl. 29—436 3 Claims



1. A method of preloading the ball bearing of a lens spin casting machine by the steps of positioning a bearing preloading collar against the inner race of the ball bearing, preloading the ball bearing by moving the preload collar toward the bearing by providing a spring force and thereby forcing both the inner ball bearing race and the ball bearings against the outer ball bearing race.

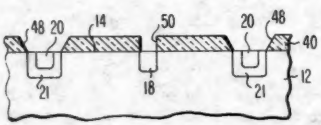
4,607,429
METHOD OF MAKING A CHARGE-COUPLED DEVICE IMAGE SENSOR

Walter F. Kosonocky, Montgomery Township, Somerset County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 29, 1985, Ser. No. 717,725

Int. Cl.[4] H01L *21/265, 21/26*

U.S. Cl. 29—572 11 Claims



1. In a method of making a charge-coupled device image sensor which includes in a substrate of semiconductor material of one conductivity type having a major surface, a plurality of parallel channel regions of the opposite conductivity type in said substrate and extending along said surface, channel stop regions in said substrate and extending along said surface between said alternate pairs of adjacent channel regions, a blooming drain region in said substrate and extending along said surface between the other alternate pairs of channel regions and a blooming drain barrier region in said substrate around each of the blooming drains, the steps of

defining the area of the substrate surface for the channel stop regions simultaneously with defining either the blooming drain barrier regions or the blooming drain regions,

forming all of the channel stop regions and the blooming drain barrier regions at the same time, and

forming the blooming drain regions separately from the channel stop regions and the blooming drain barrier regions.

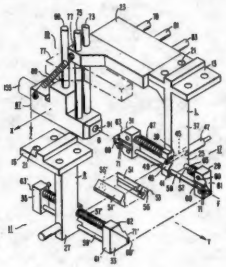
4,607,430
METHOD AND APPARATUS FOR HIGH DENSITY WIRE HARNESS MANUFACTURE

Steven J. Young, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1984, Ser. No. 670,526

Int. Cl.[4] H01R *43/00;* B65G *51/02;* B25J *15/02*

U.S. Cl. 29—868 32 Claims



1. An end effector for the insertion of a terminated wire into a connector comprising:

first and second bracket means adapted to be mounted onto an industrial manipulator, said bracket means including a strut portion, said bracket means being adapted for selected movement toward and away from each other;

first and second substantially symmetrical outer jaw means, each of which jaw means is slidably mounted in said strut portion for movement substantially perpendicular to the movement of said bracket means; whereby the selected movement of the bracket positions said outer jaw means in an open wire receiving position or a closed wire guiding and pin insertion position, said outer jaw means defining therein a wire guiding channel when closed; and

inner clamp means disposed within said outer jaw means for selective actuation between a first open position and a second closed, wire engaging position.

15. A system for the acquisition and insertion of a terminated wire into an assembly point mounted on a formboard comprising:

an end effector comprising first and second bracket means adapted to be mounted onto an industrial manipulator, said bracket means including a strut portion, said bracket means being adapted for selected movement toward and away from each other;

first and second substantially symmetrical outer jaw means, each of which is slidably mounted in said strut portion for movement substantially perpendicular to the movement of said bracket means; whereby the selected movement of the bracket means positions said outer jaw means in an open wire receiving position and a closed wire guide and pin insertion position, said outer jaw means defining therein a wire guiding channel when closed;

inner means disposed within said outer jaw means for selective actuation between a first open position and a second closed wire engaging position;

wire tensioning and centering means having a wire passage bore therethrough operationally associated with one of the first and second bracket means and adapted for eleva-

tional displacement with respect to the wire passage channel of the outer jaw means, such that in a first extended position the wire passage bore of the tensioning and centering tool is aligned with the wire passage channel of the outer jaws and in a second retracted position, the wire tensioning and centering tool is elevationally cleared from the outer jaws, and wherein the wire tensioning and centering tool is laterally movable between a first and second position to maintain an on axis alignment with the outer jaws when said jaws are in the open wire receiving position;

a wire feed system for conveying a wire from a point remote from the end effector to a selected location for acquisition by the end effector, said wire feed system comprising tube means operatively associated with the wire passage bore of the wire tensioning and centering tool, and means operatively associated with said tube means for generating a back air pressure in said tube means to blow the wire from the remote location to the selected location;

stationary clamp means comprising a generally rectangular member which is mounted onto the formboard, said stationary clamp means including a bore therein for receiving a terminated wire therein from said tensioning and centering device and including clamp means in said rectangular member for selectively engaging and releasing said terminated wire within said bore; and

at least one alignment fixture adapted to be mounted onto the formboard and defining alignment bore means therein for receiving the terminated wire portion and outer gripper jaws for the alignment of said terminated wire portion with said jaws.

25. A process for the automated manufacture of a cable harness comprising the steps of:

(1) presenting a terminated wire to a selected end effector;

(2) loading the terminated wire into the selected end effector;

(3) positioning the end effector for the insertion of a first end of the terminated wire into a desired first assembly point;

(4) inserting the first end of the terminated wire into the first assembly point;

(5) routing the terminated wire along a predetermined cable harness layout;

(6) loading a second end of the terminated wire into the selected end effector;

(7) positioning the end effector for insertion of the second end of the terminated wire into a desired second assembly point; and

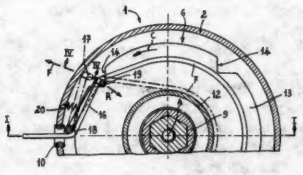
(8) inserting the second end of the terminated wire into the desired second assembly point.

4,607,431

LINE-TYPE FOLIAGE TRIMMER WITH AUTOMATIC FEED

Pierre Gay, Rue de la Petite Gallée, Millery (Rhone), France

Filed Aug. 24, 1984, Ser. No. 644,208
Claims priority, application France, Aug. 24, 1983, 83 13816
Int. Cl.[4] A01D *50/00*
U.S. Cl. 30—276 **11 Claims**



2. A foliage trimmer comprising:

a housing centered on an axis and rotatable thereabout in a direcrion, the housing being formed with a radially open eye;

a spool rotatable in the housing about the housing axis and carrying a supply of a cutting line having a free end extending from the housing through the eye thereof, the line supply being rotationally linked to the spool, the spool having an outer periphery formed with at least one radially outwardly open notch having relative to the direction a downstream flank facing at least partially radially inward;

a latching pawl having one end pivoted in the housing about a pawl axis parallel to the housing axis and an opposite end radially engageable in the notch and angularly offset from the pivoted end relative to the housing rotation direction, the pawl being displaceable between an inner position with the opposite end in the notch to inhibit rotation of the spool and an outer position with the opposite end clear of the notch and the spool being rotatable, the notch flank being inclined such that in the inner position of the opposite pawl end it bears at least generally radially inward on the opposite pawl end, the line being wound around the supply opposite to the direction, whereby when the housing and spool rotate in the direction with the end of the line projecting from the eye the line is centripetally tensioned to urge the spool to rotate opposite to the direction and to cam the opposite end of the pawl inward with the notch flank toward the inner position with a force generally proportional to the tension in the line; and

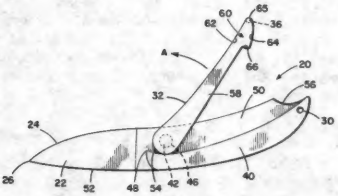
motor means for rotating the housing in the direction about the housing axis to extend the free line end radially from the eye and centripetally tension the line, for urging the opposite end of the pawl centrifugally outward by direct action of centrifugal force on the opposite end, and for urging the opposite end radially inward by camming action of the notch flank against the opposite end.

4,607,432

HUNTING KNIFE FOR FIELD DRESSING AN ANIMAL

Calvin W. Montgomery, P.O. Box 207, Inverness, Miss. 38753

Filed Jan. 24, 1985, Ser. No. 694,329
Int. Cl.[4] B26B *29/00*
U.S. Cl. 30—294 **14 Claims**



1. A hunting knife for field dressing an animal, said hunting knife comprising:

a knife handle,

a hunting knife blade extending from one end of said knife handle, said hunting knife blade including a point located at the end of the hunting knife blade opposite to said knife handle and a cutting edge extending between said knife handle and said point,

a gut hook pivotably mounted at one end on said handle for moving between a retracted position and an extended position and said gut hook, when in said extended position, protects said point from contacting the entrails and the skin of the animal during longitudinal cutting of the skin of the animal,

said gut hook includes two side portions spaced from one another and located on opposite sides of said hunting knife blade when said gut hook is in the extended position, and

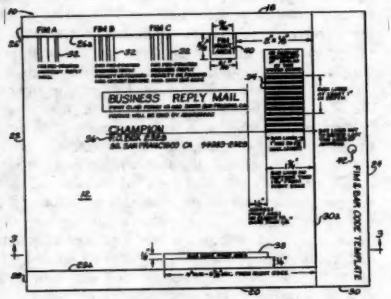
said knife handle defines two recesses for receiving said two side portions in said retracted position.

4,607,433

MARK LOCATOR

David M. Meeker, Saratoga, Calif., assignor to American Envelope Company, Chicago, Ill.

Filed Apr. 15, 1985, Ser. No. 723,336
Int. Cl.[4] G01B 5/14
U.S. Cl. 33—1 BB **5 Claims**



1. A mark locator having indicia thereon for verifying conformity of markings of a mail article as being within the dimensional limits of postal specifications, said markings including a plurality of alternative series of parallel lines of predetermined width, length and spacing, comprising:

a rectangular transparent plate having opposed top and bottom edges and opposed side edges and having a front and a back surface, said front and back surfaces being parallel and planar;

first, second and third, perpendicularly oriented edge members comprising members of rectangular cross-section fixed to the back surface of said plate adjacent and parallel to three edges of said rectangular plate and lying in first, second and third inner planes, respectively, substantially perpendicular to a plane containing said back surface; and

indicia provided on said plate at predetermined locations defining a plurality of specified areas relative to said first, second and third planes, said plate including a plurality of alternative series of parallel lines of predetermined width, length and spacing for alternative use in one of said specified areas.

4,607,434

SAW GUIDE WITH CUT LOCATION INDICATOR

John G. R. Francis, P.O. Box 329, Manning, S.C. 29102

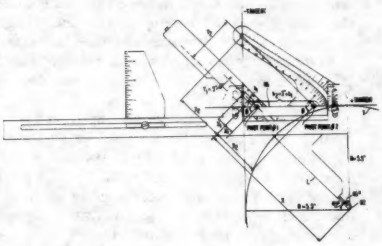
Filed Jan. 27, 1984, Ser. No. 574,425
Int. Cl.[4] B43I 13/02
U.S. Cl. 33—42 **16 Claims**

1. A saw guide for use in cutting a work piece with a power saw, said work piece including first and second adjacent surfaces and said power saw including a blade and a saw plate for sliding along said first surface of said work piece as said blade extends beyond said saw plate and into said work piece for cutting, said saw guide comprising:

a first means to be disposed in a predetermined position relative to said work piece;

a second means having at least one guide edge for cooperating with said saw plate to define a cutting path along which said saw blade will pass when cutting said work piece; and

coupling means for coupling said first and second means for relative movement with respect to one another whereby said second means can define at least three cutting paths, each of said plurality of cutting paths including a common point along an edge of said work piece through which said saw blade will pass when cutting said work piece, the distance from said first means to said common point along said edge of said work piece being the same for each of



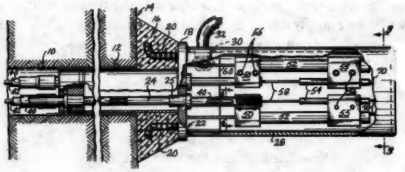
said three cutting paths, and the distance from said guide edge of said second means to said common point along a line perpendicular to said guide edge being the same for each of said three cutting paths.

4,607,435

TEMPERATURE COMPENSATED EXTENSOMETER

Bradford P. Boisen, Millcreek, Wash., assignor to The Slope Indicator Company, Seattle, Wash.

Filed Feb. 15, 1985, Ser. No. 701,995
Int. Cl.[4] G01B 7/26
U.S. Cl. 33—125 B **15 Claims**



1. A temperature-compensated borehole extensometer, comprising;

an elongated heat-responsive element formed of a tube having a rod coaxially disposed therein and distally secured thereto;

the tube and rod components of said element being formed of materials having disparate linear coefficients of expansion;

means to fixedly and remotely anchor the distal portion of said element in a borehole in the earth, the components of said element having freedom of movement relative each other and of the borehole over the length of said element between the anchored distal portion and the entrance to said borehole;

means forming a reference surface adjacent the outer end of said element and near the entrance of such borehole;

a first transducer fixed to said tube in parallel disposition and including a probe associated with said reference surface;

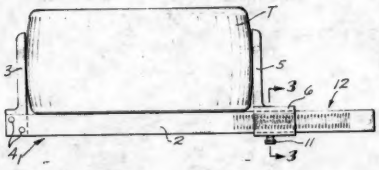
a second transducer fixedly associated with said first transducer and having a probe associated with the outer extremity of said rod; and

means for comparing the responses of the first and second transducers to the presence or absence of heat affecting said elements.

4,607,436
AUTOMOBILE TIRE-SPANNING BEAM OUTSIDE CALIPERS

Truman R. Clay, 7631 Coal Creek Pkwy. Southeast, Renton, Wash. 98056

Filed Feb. 2, 1984, Ser. No. 576,185
Int. Cl.⁴ G01B *5/08*
U.S. Cl. 33—143 D **5 Claims**



1. Automotive vehicle tire-spanning outside calipers comprising opposed tire-contacting members for engagement with diametrically opposite portions of a tire, joining means connecting said tire-contacting members and guiding said tire-contacting members for relative movement toward and away from each other, and scale means and index means movable relative to each other in synchronism with movement of said tire-contacting members relative to each other, said scale means including a scale line elongated transversely of but inclined relative to the direction of relative movement of said scale means and said index means, and said index means including a line extending transversely of the direction of relative movement of said scale means and said index means and disposed for crossing said inclined scale line a predetermined spacing of said tire-contacting members.

4,607,437
ADJUSTABLE LEVEL

Harry J. McSorley, Sr., 1717 S. Washington, Wichita, Kans. 67211, and Sophokles Anthimides, 219 E. Douglas, Wichita, Kans. 67202

Filed Jan. 31, 1985, Ser. No. 696,970
Int. Cl.⁴ G01C *9/00*
U.S. Cl. 33—374 **1 Claim**

1. An adjustable level apparatus consisting of:

an elongated core level unit provided with a plurality of spirit levels, and having an elongated aperture disposed proximate to, but spaced from, each end of said core level element; wherein said core level unit comprises a generally H-shaped core level element having two vertical wall members and an intermediate horizontal wall member; and said plurality of spirit levels comprises three distinct spirt levels, one of which is disposed at the mid-point of the horizontal wall member, and the remaining two of which are disposed proximate to, but spaced from, the ends of said horizontal wall member;

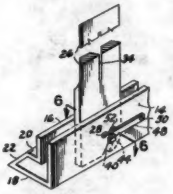
a pair of extension arm units disposed on the ends of the core level unit, and mounted for reciprocation along the elongated axis, thereof; wherein said extension arm units comprise: an upper housing element; a lower housing element; and, at least one elongated securing rod that extends through one of said elongated apertures in the said core level unit, and connects the upper and lower housing elements to one another; wherein, both of the upper and lower housing elements are identical in construction and each housing element is further provided with a semi-circular aperture on its inboard end, and an enlarged generally eliptical aperture disposed proximate its mid-point, wherein the enlarged generally eliptical apertures are dimensioned to receive and allow limited relative motion between the assembled housing elements by virtue of the ends of the enlarged generally eliptical apertures coming into stop limiting contact with the said two spirit levels which are disposed proximate to, but spaced from the ends of said horizontal wall member on said elongated core level unit; and,

an extension leg unit secured to each extension arm unit, and having an extension leg element that is reciprocal with respect to each extension arm unit in a direction perpendicular to the elongated axis of the core level unit.

4,607,438
WALL AND RAFTER LAYOUT TOOL

Eugene R. DeFrange, 995 W. Jackson, Box B, Krebs, Okla. 74554

Filed Feb. 26, 1985, Ser. No. 705,945
Int. Cl.⁴ G01C *9/00*
U.S. Cl. 33—451 **5 Claims**



1. A carpenter's stud framing layout tool, comprising:

an elongated channel-like rail having a planar bight portion and parallel front and back walls and having a top wall spaced from and parallel with the bight portion and joined to the front wall in laterally projecting normal relation for forming a workpiece abutment when the layout tool is disposed on a length of dimension lumber;

a plurality of strap-like tongues each pivotally secured by one end portion between said front and back walls in normally parallel equally spaced relation corresponding to the desired distance between wall framing studs to be erected for pivoting movement of the other end portion of the said tongues about the axis of the pivotal connection from an erected normally right angular position with respect to said front and back walls toward and away from a nested position between said front and back walls; and,

means on the pivotally connected end portion of each said tongue for maintaining said tongues normal to the longitudinal axis of the rail or nested between said front and back walls.

4,607,439
LAMINATED SHEET AND A METHOD FOR PRODUCING THE SAME

Kunihiko Harada, Ashikaga, Japan, assignor to Achilles Corporation, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,738
Claims priority, application Japan, Mar. 4, 1983, 58-35464
Int. Cl.⁴ A43B *23/00*; B32B *7/00*
U.S. Cl. 36—45 **19 Claims**

1. a laminated sheet comprising a first woven fabric in which at least a part of the warp consist of spun yarn having whisker fibers, said spun yarn having previously been treated with a water and oil repellent, a rubber composition layer having a plurality of fine air passages therein formed on said first fabric and a second fabric laminated on said rubber composition layer said rubber composition layer having as its main ingredient the

reaction product of a liquid diene-polymer having at least two active hydrogen groups in the molecule and a polyisocyanate.

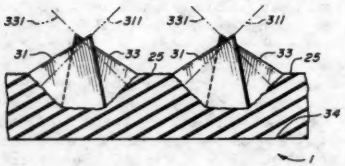
9. A laminated sheet comprising a first woven fabric in which at least a part of a weft consist of spun yarn having whisker fibers, said spun yarn having previously been treated with a water and oil repellent, a rubber composition layer having a plurality of fine air passages therein formed on said first fabric and, a second fabric laminated on said rubber composition layer, said rubber composition layer having, as its main ingredient the reaction product of a liquid diene-polymer having at lesat two active hydrogen groups in the molecule and a polyisocyanate.

4,607,440

OUTSOLE FOR ATHLETIC SHOE

Leslie E. Roberts, Haverhill, and Sumner F. Davis, Methuen, both of Mass., assignors to Converse Inc., Wilmington, Mass.

Filed Jan. 12, 1984, Ser. No. 570,172
Int. Cl.[4] A43B *5/00, 13/00*
U.S. Cl. 36—114 **5 Claims**



1. An outsole for an athletic shoe, comprising:

(a) a base surface in a first plane for contacting the ground and having a longitudinal axis;

(b) a plurality of parallel, V-shaped grooves located in the base surface and transverse to the longitudinal axis, each groove having a pair of opposing walls oblique to the base surface; and

(c) a plurality of traction elements, closely spaced without making contact one with another at any point, and each having a tip, such traction elements located on the walls and projecting outward therefrom,

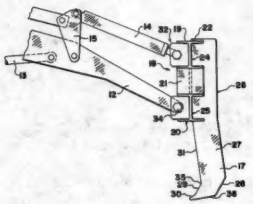
wherein the traction elements are alternately arranged on the opposing walls so as to form a tightly woven, continuous zig-zag channel therebetween, each traction element projecting out beyond the first plane at an oblique angle thereto, the tips of such elements forming a resilient matrix in a second plane so disposed as to make contact with the ground before contact therewith of the base surface when such outsole is in use.

4,607,441

STONE DIGGING ATTACHMENT FOR FRONT END LOADER ATTACHMENT OF A TRACTOR

R. Scott Norton, Box 23, Rocanville, Saskatchewan, Canada (S0A 3L0)

Filed Apr. 30, 1985, Ser. No. 729,033
Int. Cl.[4] A01B *43/00*
U.S. Cl. 37—2 R **18 Claims**



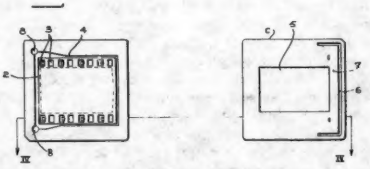
1. A stone digging attachment for the front and loader mechanism of a tractor of the type comprising, with the bucket removed, a pair of horizontally spaced lift arms and a pair of horizontally spaced hydraulic cylinders mounted above the lift arms, the attachment comprising a frame having a first pair of brackets for attachment to said lift arms and a second pair of brackets for attachment to said cylinders, and a pair of parallel spaced downwardly extending stone engaging tines mounted on said frame whereby the tines can be engaged into the ground against the stone by operation of said lift arms and cylinders for withdrawal of the stone from the ground, each tine having a pointed tooth at the bottom end thereof arranged at an angle to the length of the tine and directed such that, when the attachment is mounted on the tractor, the tooth is pointed toward the tractor, said frame comprising a pair of parallel spaced I-beams with the tines welded to each at right angles thereto such that each tine passes through and is welded to slots formed in half of the top and bottom flanges of the I to one side of the web of the I.

4,607,442

SLIDE MOUNT

Gérard Desmarais, Mont-Royal, and Claude Desmarais, Ville Mont Royal, both of Canada, assignors to Desmarais & Frere Ltd, Longueuil, Canada

Filed Aug. 14, 1985, Ser. No. 765,441
Claims priority, application Canada, Aug. 17, 1984, 461261
Int. Cl.[4] A47G *1/06;* G09F *1/12*
U.S. Cl. 40—152 **8 Claims**



1. In a slide mount of the type comprising a flat rectangular pocket forming a slideway for receiving a standard slide film provided with two lateral rows of driving notches, a central window formed in said pocket and a deformable slot in communication with the slideway to allow introduction of the slide film into said slideway with the rows of notches of the film

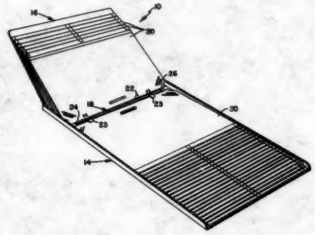
perpendicular to the slot, the improvement wherein at least one sprocket is provided for inside the slideway to engage one of the notches of the film to lock the same inside the slideway after introduction, said sprocket being smaller in size than the notch to let the film free to expand to a certain extent when subjected to the heat of a lamp.

4,607,443

VISIBLE INDEX POCKET CONSTRUCTIONS

Alexander P. Janssen, 28 Old Farm Rd., Charlottesville, Va. 22901

Filed Jan. 13, 1984, Ser. No. 570,383
Int. Cl.[4] B42F *5/00*
U.S. Cl. 40—405 **6 Claims**



1. A visible index pocket consisting essentially of:

a rectangular flexible planar sheet type member having first and seond pairs of substantially parallel opposed edges and having opposed faces for supporting data cards thereon,

attaching means disposed at one of the first pair of said edges of said sheet type member for attaching said member to a supporting unit for substantially pivotal motion with respect to said unit, and

a separate pocket tip attached and supported by the opposite edge of said first pair of edges of said sheet type member and extending substantially the length thereof, said second pair of edges being free of any attachment, said pocket tip comprising;

an elongated element having a central substantially planar stem and a pair of sides spaced from said stem on opposite sides thereof, said stem and said sides being attached together by a bottom extending outwardly in opposed directions from said stem to said sides, said stem and said sides extending in substantially the same direction from said bottom, said stem being attached to said second of said edges of said sheet type member to attach said pocket tip to said member, said sides and stem defining elongated substantially parallel recesses on opposite sides of said stem for receiving one edge of said data cards to thereby support said data cards on said opposed faces of said sheet type member with said data cards extending outwardly beyond said pocket tip across extended portions of said opposed faces of said sheet type member for support thereby and pivotal movement therewith.

4,607,444

PORTABLE ILLUMINATION DISPLAY SIGN

C. Tom Foster, P.O. Box 490068, Miami, Fla. 33149-0068

Filed Dec. 14, 1984, Ser. No. 681,812
Int. Cl.[4] G09F *13/28*
U.S. Cl. 40—550 **12 Claims**

1. A portable illuminated sign assembly of the type primarily designed to be hand-carried when not in use, said assembly comprising:

(a) a base formed from a substantially flexible material and including a display face, said base structured to be folded upon itself and selectively positionable between an open and a closed position,

(b) said base comprising a substantially hollow interior portion defined at least in part by oppositely disposed and spaced apart side panels,

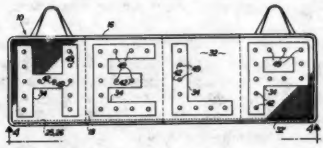
(c) indicia means mounted on said display face for representation of a display thereon, and structured for visual distinction from a remainder of said display face,

(d) illumination means mounted on said base and disposed and configured to accentuate said indicia means relative to and distinguished from said display face and enhance visual observation of said indicia means,

(e) said indicia means comprising a plurality of indicia segments disposed in substantially spaced relation to one another on said display face, said illumination means comprising a plurality of illumination segments each correspondingly configured in conformance with a respective indicia segment and disposed to illuminate said respective indicia segments,

(f) circuit means removably disposed in part within said interior portion and structured for electrical interconnection of said illumination segments with one another and a power source,

(g) said illumination segments comprising a plurality of light bulbs electrically connected to said circuit means and disposed in spaced relation to one another to define a plurality of electrically interconnected and independently



configured arrays, each array correspondingly configured to one of said indicia segments, whereby said indicia means is effectively outlined in illumination,

(h) said base further comprising an aperture means integrally formed in said display face for visual observation of said illumination means, said aperture means comprising a plurality of apertures correpondingly configured to said indicia segments and disposed in aligned relation therewith; each of said plurality of light bulbs disposed in registry with one of said plurality of apertures and extending therethrough for visual observation of said display face,

(i) said illumination means further comprising a mounting means structured for connection and orientation of said plurality of light bulbs into respective ones of said arrays, said mounting means formed from at least partially rigid material and configured to substantially correspond to each of said indicia segments,

(j) said mounting means being formed from electrically conductive material and being disposed and structured to electrically interconnect said plurality of light bulbs of each array with said circuit means, and

(k) connecting means structured for support of said base in said open position for visual observation of said display face.

4,607,445

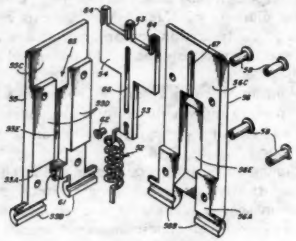
TEMPERATURE COMPENSATING FRONT SIGHT

Paul V. Choate, Milton, Mass., assignor to N I Industries, Los Angeles, Calif.

Filed Jun. 4, 1984, Ser. No. 617,377
Int. Cl.[4] F41G *1/00*
U.S. Cl. 42—100 **6 Claims**

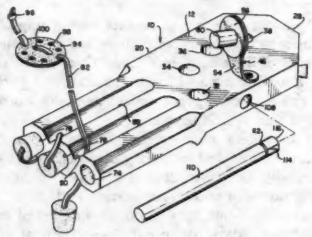
6. A thermally responsive front sight for a launcher of a projectile the efficiency of the propellant of which varies with the temperature thereof, the launcher of a type thermally insulating the projectile and having a port opening into a ther-

rially insulated housing adjacent the muzzle and provided with a removable closure, said sight including a sighting member provided with a central sighting post, said sighting member and post integral, thin and flat surfaced, and a sight housing having a central chamber the width of which is substantially less than the width of the sighting member, said sight housing having a transverse slot in communication with said chamber and shaped and dimensioned to receive and slidably confine said sighting member, said sighting member within said slot with a central portion thereof exposed in said chamber and with said sighting post exposed above said sight housing, a



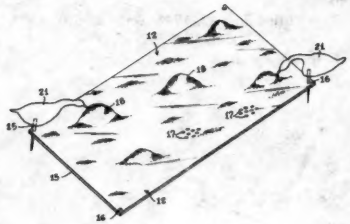
thermally responsive element within said chamber with one end anchored in the bottom thereof and the other end thereof attached to said exposed portion of the sighting member, said element of the type expanding lengthwise as the temperature rises and contracting as said temperature falls, and said sighting member and said sight housing including interengaged portions within said housing and within the confines of the sighting member establishing a slidable connection operable to maintain said sighting member against lateral movement while permitting vertical movements of said sighting member by said element.

4,607,446
MUZZLE LOADER
Melvin W. Scheuring, 18053 Bennett Rd., North Royalton, Ohio 44133
Filed Mar. 18, 1985, Ser. No. 713,154
Int. Cl.[4] F41C *27/00*
U.S. Cl. 42—90 **20 Claims**



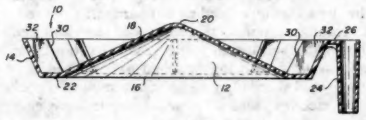
1. A muzzle loader, comprising:
(a) an elongated block having a top face and a bottom face and side faces therebetween providing a vertical dimension;
(b) a plurality of shot-receiving apertures through said top and bottom faces and said apertures being angularly spaced apart on a generatrix of constant radius;
(c) a flexible punch pad pivotally connected proximate one end thereof to said block at said generatrix; and
(d) a punch block secured proximate a second end of said punch pad and being alignable with said apertures by pivoting of said punch pad so that said punch block is positionable in said apertures and said punch block being of sufficient length to force shot from said apertures when inserted fully therein.

4,607,447
FOOD DECOY MAT FOR WATERFOWL
William H. Wright, 919 S. 17th St., Arlington, Va. 22202
Filed Feb. 13, 1985, Ser. No. 701,155
Int. Cl.[4] A01M *31/06*
U.S. Cl. 43—3 **19 Claims**



1. A food decoy apparatus equally effective on dry land and an underwater environment to attract waterfowl to fields and to shallow water areas, wherein the decoy apparatus comprises:
an enlarged flexible member having transparent portions and opaque portions, wherein at least some of the opaque portions are generally mound shaped protrusions rising from the otherwise flat surface of said flexible member, and self supportive in use, said opaque portions being representative, with respect to both size and coloration, of kernels of grain.

4,607,448
APPARATUS FOR CASTING A NET
John D. Brief, Rte. 11, Box 215, Tyler, Tex. 75709
Filed Aug. 1, 1985, Ser. No. 761,161
Int. Cl.[4] A01K *73/04*
U.S. Cl. 43—8 **7 Claims**



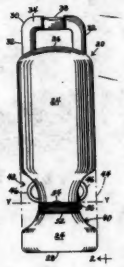
1. A device for throwing a casting net comprising receptacle means for holding a net having a continuous sidewall and a bottom, and open at the top thereof, said bottom having a central portion comprising substantially upwardly conical means for supporting the net to help keep the net from becoming entangled, and means comprising a plurality of ribs extending radially inwardly from and secured to said sidewall for preventing net weights from sliding around said receptacle, and handle means on the outside of said receptacle.

4,607,449
FISHING JUG
Howard Brachear, 12 Sunset Acres, Farmersville, Ill. 62533
Filed May 28, 1985, Ser. No. 737,710
Int. Cl.[4] A01K *97/12*
U.S. Cl. 43—43.11 **3 Claims**

1. A fishing jug comprising: a floatable hollow housing having a generally cylindrical side wall;
top and bottom end walls at opposite ends of said housing;
a handle connected to the top end wall;

said side wall having a reduced diameter neck portion in the lower portion of the side wall providing a downwardly enlarged, flared lower ballast compartment between the neck portion and the bottom wall; and

hook engageable loop means extending outwardly from the neck portion of the side wall and being entirely recessed within a cylindrical projection of the side wall;



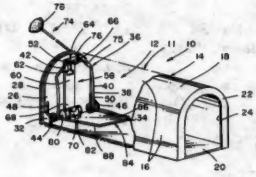
whereby a plurality of the fishing jugs may be piled or stacked with lines having baited hooks wrapped around the neck portion and the hooks may be temporarily held by the respective hook-engageable loop means within the neck portion without snagging or tangling the lines or hooks.

4,607,450

ENCLOSED MOUSETRAP HAVING IMPROVED TRAP MECHANISM

Dennis G. Kaiser, and Robert D. Kaiser, both of Walled Lake, Mich., assignors to AmCan, Inc., Warren, Mich.

Filed Nov. 20, 1984, Ser. No. 673,494
Int. Cl.[4] A01M *23/30*
U.S. Cl. 43—83 **6 Claims**



1. A mousetrap comprising:

a housing defining a passageway and having a front end including an access opening through which a rodent enters the housing, and said housing having a back end including a back wall that closes the passageway;

a trap mechanism mounted on the back wall of the housing, said trap mechanism including a bail wire mounted on the back wall for movement between a generally vertical cocked position and a generally horizontal tripped position, said bail wire having a generally U shape including a straight portion defining the closed end of its U shape, spring means for biasing the bail wire toward the tripped position, a catching member having an upper end movably mounted on the back wall and also having a lower end including a bait holder, the upper end of the catching member including a bail wire detent having a horizontal portion that projects forwardly from the back wall and also having a detent projection that projects downwardly from the horizontal portion, said detent projection being stamped from sheet metal and having a generally V shape in a sideways direction with respect to the passageway, said detent projection having a lower surface that is engaged by the straight portion of the bail wire in a line contact during operation of the trap mechanism, said detent projection including a front ramp portion that is engaged by the straight portion of the bail wire in a line contact as the bail wire is moved from the tripped position to the cocked position and such engagement moving the detent projection upwardly to permit the straight portion of the bail wire to move to the rear thereof, the detent projection having a rear detent portion that engages the straight portion of the bail wire in a line contact in the cocked position to hold the bail wire until movement of the lower bait holder moves the detent projection to release the bail wire for spring biased movement toward the tripped position as the straight portion of the bail wire slides along the lower surface of the detent projection in a line contact relationship, and the detent projection having a constantly decreasing width in a downward direction along the rear detent portion and in an upward direction along the front ramp portion; and

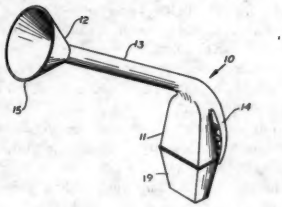
a pull having a first end connected to the bail wire and a second end extending outwardly from the housing to permit manually actuated movement of the bail wire from the tripped position to the cocked position.

4,607,451

INSECT TRAP

Frank E. Jarecki, 5650 Culpepper Dr., Erie, Pa. 16506

Filed Aug. 2, 1985, Ser. No. 761,899
Int. Cl.[4] A01M *1/06*
U.S. Cl. 43—139 **2 Claims**



1. A portable vacuum operated insect trap instrument comprising a source of vacuum,

an elongated wand connected to said source of vacuum and a hollow frustoconical shaped applicator connected to said wand and the wand attached to the vacuum device at an obtuse angle,

said source of vacuum comprises an electric driven blower,

a tank having bag means therein to receive insects drawn through said applicator and said wand into said tank,

said source of vacuum has a first end and a second end,

said tank being removably supported on said second end having said bag means therein to receive insects,

said wand being attached to said vacuum means at the end opposite said tank,

said wand extending from said vacuum device a substantial distance whereby the operator can reach insects on a ceiling of an ordinary room with said frustoconical applicator,

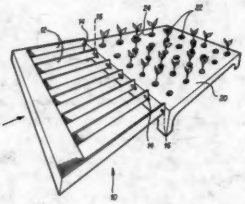
said bag has a closure with a central opening having a drawstring supporting it on a flange in said tank,

said drawstring being adapted to close the mouth of said bag when said bag is removed from said tank.

4,607,452
SEEDLING DETECTOR AND FERRET

Bryan W. Maw, and Harold L. Brewer, both of Tifton, Ga., assignors to The University of Georgia Research Foundation, Inc., Athens, Ga.

Filed Jun. 22, 1984, Ser. No. 623,399
Int. Cl.[4] A01C *1/00*
U.S. Cl. 47—1 R 5 Claims



1. A detector device, for detecting seedlings suitable for transplantation in a tray having a two-dimensional grid of cells, with a container in each cell, said containers containing a growth medium and a plant seed, some of said plant seeds having grown into seedling plants and others of said plant seeds not having emerged, said detector device comprising:

a comb having a plurality of teeth with the spacing between teeth being equal to the spacing between rows of cells, each tooth being long and thin so that said teeth pass midway between rows of said cells without touching any of said plants;

a plurality of energy sources equal in number to the number of rows of cells, at least one of said sources mounted on a first side of each of said plurality of teeth;

a plurality of energy detectors equal in number to the number of rows of cells, at least one of said detectors mounted on a second side of each of said plurality of teeth so that each of said sources is aligned with a corresponding one of said detectors to provide an energy beam thereto;

said sources and detectors being mounted near the ends of said teeth;

a plurality of threshold devices having an associated adjustable threshold signal value, each of said threshold devices receiving said output from a corresponding one of said detectors and holding high or low values of said output signal from said detector;

a shift register for receiving said signal values from said threshold devices and temporarily holding said values; and

a memory for storing said signal values;

said energy detectors also determining the height of said seedlings;

said tray and said comb being relatively movable so that each seedling plant passes between one of said sources and a corresponding one of said detectors to interrupt said energy beam, causing an output signal from said detector, whereby the presence of a seedling is detected so that cells without seedlings may be detected for removal and replacement.

4,607,453
HYBRID CORN PLANTS WITH IMPROVED STANDABILITY

A. Forrest Troyer, DeKalb, Ill., assignor to DeKalb-Pfizer Genetics, DeKalb, Ill.

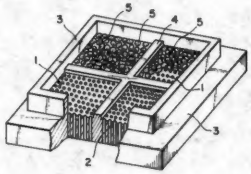
Filed Feb. 21, 1985, Ser. No. 703,587
Int. Cl.[4] A01H *1/02*
U.S. Cl. 47—58 5 Claims

1. Novel F1 generation hybrid corn plants DK 672.

4,607,454
METHOD OF HYDROPONICALLY GROWING PLANT SPROUTS AND APPARATUS THEREFOR

Yujiro Koike, 115, Tenma-cho, Hamamatsu-shi, Shizuoka-ken, Japan (430)

Filed May 24, 1983, Ser. No. 497,650
Claims priority, application Japan, May 24, 1982, 57-87537; Aug. 12, 1982, 57-123614[U]
Int. Cl.[4] A01G *31/00*
U.S. Cl. 47—63 15 Claims



1. A bed for floating on water for use in hydroponically growing plant sprouts, comprising:

a substantially hydrophobic pad having a top surface and a bottom surface;

said pad having a plurality of substantially straight through holes each extending vertically through said pad from said top surface to said bottom surface to define a plurality of closely spaced root growth passages therein, said pad having on the order of 500 to 1000 holes per 100 square centimeters,

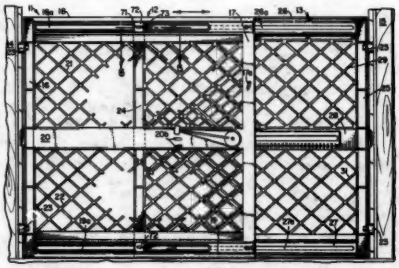
each root growth passage having a diameter in the range of 0.5 to 3 mm so as to provide substantial capillary attraction, and

wherein an end of each said through hole is in contact with said water so that each passage can continually retain water therein when said bed is floating on said water.

4,607,455
ADJUSTABLE GATE FOR DOORWAYS

Gary R. Bluem, Wayzata, Minn.; John W. Goodin, Long Beach, and Larry G. Hickey, Laguna Hills, both of Calif., assignors to North States Industries, Inc., Minneapolis, Minn.

Filed Oct. 1, 1984, Ser. No. 656,235
Int. Cl.[4] E06B *3/68*
U.S. Cl. 49—55 22 Claims



1. A portable, variable width gate for doorways and the like, comprising:

first and second gate sections of predetermined height and width, each comprising

a rectangular external frame defined by top and bottom substantially horizontal cross members and substantially vertical side members;

a substantially horizontal middle cross member disposed between the top and bottom members and interconnecting the side members;

a mesh section interconnecting the respective frame members;

means for connecting the gate sections for free relative sliding movement between a first position of minimum gate width and a second position of maximum gate width;

and operator means for fixing the relative positions of the first and second gate sections at a predetermined width comprising:

handle drive means carried by the middle cross member of one of said gate sections for movement through first and second ranges of positions;

drivable means carried by the middle cross member of the other of said gate sections;

the handle drive means comprising a first operative portion engageable with the drivable means and cooperable therewith to effective relative movement between the first and second gate sections when the handle drive means is moved through the first position range, and a second operative portion incapable of engaging the drivable means when the handle drive means is moved through said second position range;

and means for selectively fixing the handle drive means in a plurality of discrete positions within said first position range.

4,607,456

DOOR WINDOW REGULATOR

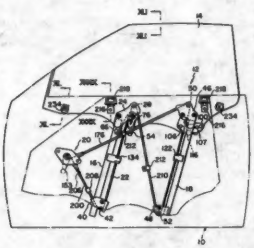
Daiichi Shiraishi; Eiji Iwasaki, and Ryoichi Fukumoto, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin Seiki Co., Ltd., both of, Japan

Filed Jun. 5, 1985, Ser. No. 741,618

Claims priority, application Japan, Jun. 6, 1984, 59-83808; Jun. 6, 1984, 59-83809

Int. Cl.[4] E05F *11/48*

U.S. Cl. 49—352 **20 Claims**



1. A door window regulator for vertically moving a door window glass of a vehicle, comprising:

(a) upper and lower pulleys respectively disposed at the upper and lower portions of a door;

(b) a wire having a portion thereof stretched between said upper and lower pulleys and connected to the lower portion of said door window glass at a portion of said wire between said upper and lower pulleys such that said wire forms a closed loop;

(c) a driving unit adapted to actuate a portion of said closed loop wire, thereby applying actuating force to said door window glass by means of which it is raised and lowered; and

(d) the axis of either one of said pulleys, said axis extending in the direction substantially orthogonal to the plane which includes the portion of said wire which extends from said pulley to said driving unit and is directed toward the inside of the compartment of said vehicle, whereby it is possible for said wire to be smoothly passed over said pulley, and the friction occurring between said wire and the side surface of the pulley groove is thereby reduced.

4,607,457

DOOR AND DOOR JAMB ARRANGEMENT

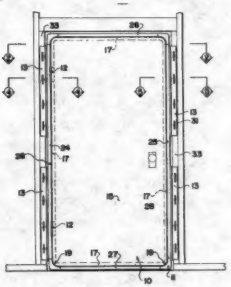
James G. Shewchuk, 1988 Pacific Avenue, Winnipeg, Manitoba, Canada (R2R 0G4)

Filed Mar. 8, 1985, Ser. No. 709,771

Claims priority, application Canada, Apr. 12, 1984, 451885

Int. Cl.[4] E05D *7/00*

U.S. Cl. 49—400 **5 Claims**

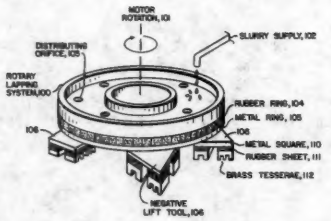


1. A door and door jamb arrangement for a doorway of a building comprising a door having a front surface, a rear surface each having edges defining a top edge, a bottom edge and two side edges of the door spaced to allow the passage through the doorway of an erect adult human and a peripheral edge surface surrounding and interconnecting the front and rear surfaces including a top portion, a bottom portion and two side portions, a door jamb which is a rigid integral unit for fully surrounding the door and which has a plain inner surface free from resilient sealing means for surrounding the periphral edge surface of the door and for cooperating therewith to form a seal surrounding the door, said top portion, bottom portion and side portions of the peripheral edge of the door and of the inner surface of the door jamb being arranged to form substantially a rectangle with the corners thereof radiused and being shaped such that the only contact between the door and the jamb occurs between the peripheral surface of the door and the inner surface of the jamb, hinge means for mounting the door on the door jamb for pivotal movement about one side edge of the door, means for mounting the rigid door jamb on a building frame so as to accommodate movement of the frame relative to the jamb, and elongate sealing means supported by, extending along and projecting outwardly from the peripheral edge surface for engaging the plain inner surface to form a seal therewith, at least the top and bottom portions and the other side portion of both said inner surface and said peripheral edge surface being tapered in a direction so as to incline relative to a plane which is at right angles to the front surface and which includes a portion of the edge of the front surface adjacent to said portions and so that in the closed position of the door the inner surface and peripheral edge surface lie in close parallel relationship whereby said sealing means is compressed by sliding movement against said tapered portions caused by a closing movement of the door into the door jamb.

4,607,458
VERY HIGH SPEED LAP WITH NEGATIVE LIFT EFFECT

Roger K. Lee, Watertown, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 8, 1985, Ser. No. 720,936
Int. Cl.[4] B24B *7/00*
U.S. Cl. 51—119 **6 Claims**



1. A rotary lapping system capable of grinding and polishing a workpiece using an abrasive slurry liquid, said rotary lapping system generating strong cutting pressures without a need for strong downward pressures on the workpiece by generating a negative lift and suction between it and the workpiece through hydrodynamic action which generates the negative lift in the abrasive slurry liquid, said rotary lapping system comprising:

a supply of the abrasive slurry liquid, which is applied to the workpiece;

a rotary means;

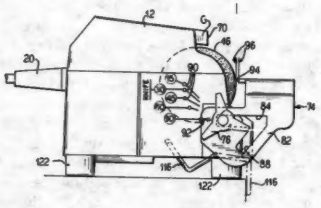
a dish member being rotated by said rotary means; and

a plurality of negative lift tools, each fixed beneath an outer edge of said disk member and producing said negative lift by presenting a surface with a negative angle of attack in said abrasive slurry liquid, each of said plurality of negative lift tools presenting a grinding surface to said workpiece which, when rotated in said abrasive slurry liquid from said supply, is used to grind said workpiece.

4,607,459
COMBINED HOLLOW GRINDER, SHARPENER AND HONER

Spencer C. Rees, Sugar Grove, Ill., assignor to Wen Products, Inc., Chicago, Ill.

Filed Aug. 10, 1984, Ser. No. 640,158
Int. Cl.[4] B24B *3/00, 27/02*
U.S. Cl. 51—102 **22 Claims**



1. An electric grinder comprising:

a housing;

a horizontally mounted cylindrically shaped grinding wheel rotatably mounted in said housing; motor means for drivingly rotating said wheel; and

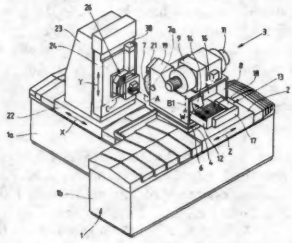
a tool rest member having a tool support surface pivotally and laterally movable relative to said wheel and mounting means for mounting the member on the housing forming a phantom pivot point for the member;

said mounting means comprising a V-shaped slot in said member capturing a fixed pivot pin means on said housing; whereby, the member is pivotable about said fixed pivot pin means and is laterally movable by sliding said slot relative to said fixed pivot pin means.

4,607,460
GRINDING MACHINE WITH A RECIPROCABLE COLUMN FOR WORK SUPPORTING DEVICES

Heinrich Mushardt, Wechelde, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Aug. 20, 1985, Ser. No. 767,411
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1985, 3513970
Int. Cl.[4] B24B *51/00*
U.S. Cl. 51—165 TP **20 Claims**



1. A machine tool, particularly a numerically controlled profile grinding machine, comprising a bed; a grinding spindle carrying device on said bed; means for reciprocating said device with reference to said bed along a substantially horizontal first path; means for indexing said device about a substantially vertical first axis; a supporting device on said bed; a head on said supporting device; means for reciprocating said head relative to said supporting device along a substantially vertical second path; means for indexing said head relative to said supporting device about a second axis; a work holder mounted on said head and indexible about a third axis which is at least substantially normal to said second axis; and means for reciprocating at least one of said devices along a substantially horizontal third path which is normal to said first path.

4,607,461
ACCURATE POSITIONING APPARATUS

Charles Adams, 9735 N. Sumac, Des Plaines, Ill. 60016

Filed Dec. 10, 1984, Ser. No. 679,748
Int. Cl.[4] B24B *49/00*
U.S. Cl. 51—165.8 **19 Claims**

1. An apparatus for controlling accurate positioning of a movable member comprising:

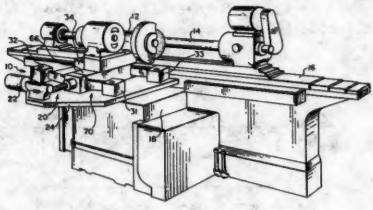
a rigid base;

member mounting means spaced from said base for mounting a movable member, said member mounting means having an axis along which said member mounting means can be reciprocally moved, a distal end, and a proximal end which is capable of being moved by a drive force applied thereto for moving said distal end forwardly and rearwardly along said axis;

elongate flexure means extending transversely of said member mounting means, said flexure means being fixed to said member mounting means for maintaining a force on said member mounting means in a direction along the axis of said member mounting means;

and flexure means mounting means at each end of said flex-

ure means for mounting each end of said flexure means to said base in a manner permitting limited movement of said ends of said flexure means whereby a member mounted to said member mounting means can be accurately positioned by a drive force applied against said proximal end of said member mounting means and against said force of said flexure means, such as to an accuracy of 10 millionths of an inch.

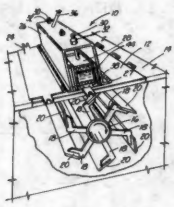


4,607,462

COOLING AND LUBRICATING DEVICE FOR SHARPENING FEED CHOPPING KNIVES

Charles J. Murphy, Rte. #4, Abilene, Kans. 67410

Filed Jan. 3, 1985, Ser. No. 688,531
Int. Cl.[4] B24B *55/02*; B24D *5/10*
U.S. Cl. 51—213 **2 Claims**



1. A cooling and lubricating device for sharpening feed chopping knives, the knives mounted on a rotating cutter head disposed inside a chopper box, the device comprising:

a sharpener housing hinged on the top of the chopper box and disposed above an opening in the box;

an elongated fluid reservoir mounted in the housing for holding fluids therein, the reservoir having a plurality of openings along one side of the reservoir bottom, the openings in the bottom of the reservoir are above the fluid level when the hinged housing and reservoir are rotated 90 degrees in a raised position;

an elongated sharpening stone attached to the bottom of the reservoir by stone holders disposed on opposite sides of the reservoir, the stone porous for receiving fluid from the openings along the length thereof, the bottom of the stone disposed adjacent the rotating knives, the fluid permeating through the stone for cooling and lubricating the knives and the stone as the stone sharpens the knives;

means for raising and lowering the fluid reservoir and sharpening stone in the housing; and

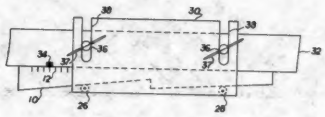
a fluid fill line attached to the top of the reservoir for supplying fluid thereto.

4,607,463

ADJUSTMENT MEANS FOR A DRILL BIT SHARPENING DEVICE

Albert Slinsky, 909 Aberdeen Ave., New Port Richey, Fla. 33552

Filed Jul. 29, 1985, Ser. No. 759,746
Int. Cl.[4] B24B *3/26*
U.S. Cl. 51—219 R **3 Claims**



1. An improved apparatus for sharpening a drill bit on a grinding means, of the type in which a cradle means holds the drill bit to be sharpened and in which a cradle means holder holds said cradle means and hence said drill bit in a predetermined angular orientation relating to the point angle of said drill bit, in which a support means for supporting said cradle means holder is moveable in a linear direction away from or toward said grinding means, said grinding means being positioned for rotation in a plane normal to said support means, wherein the improvement comprises:

a travel limiting means that determines the optimal forwardmost position of said support means relative to said grinding means and hence of said drill bit to be sharpened for a given drill bit point angle,

said travel limiting means comprising a slideably mounted, elongate spacer member having a plurality of laterally spaced visually detectable markings formed thereon, each of said markings corresponding to a different setting of said travel limiting means,

said travel limiting means further comprising a flat plate member having a leading edge positioned parallel to the plane of said grinding means;

said travel limiting means further comprising a pair of laterally spaced pin members fixedly secured to said leading edge of said plate member;

said spacer member further including a leading edge with two inclined portions, the angle of each of said inclined portions corresponding to the angle of the other inclined portion and corresponding to a predetermined distance of each setting of said travel limiting means, wherein said predetermined distance relates to the distance between said support means and said grinding means,

a flat base member having a leading edge which slideably abuts a trailing edge of said spacer member;

the position of the leading edge of said plate member being determined by the engagement of said pin members and their associated inclined surfaces which position is indicated by said markings;

and means for releasably securing said plate member into a plurality of functional positions of adjustment.

4,607,464

COATED ABRASIVE BACK UP PAD

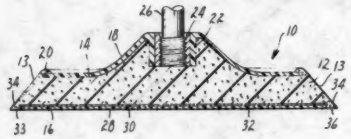
Thomas W. Schwartz, Troy Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1984, Ser. No. 670,292
Int. Cl.[4] B24D *9/08*
U.S. Cl. 51—362 **10 Claims**

1. In a coated abrasive back up pad comprising a layer of resiliently compressible foam having first and second spaced surfaces a generally rigid backing plate fixed to said first surface of said backing plate, means attached to said backing plate adapted for coupling said back up pad to a drive motor, and a flexible magnetized layer comprising magnetized particles within a polymeric matrix fixed to the second surface of said layer of foam, having a generally planar support surface oppo-

site said layer of foam and having an edge surface adjoining and disposed generally normal to the support surface, the improvement wherein:

said foam layer includes a lip extending around the edge surface of said magnetized layer, said lip having a peripheral surface generally coplanar with said support surface;



both said support surface and said peripheral surface are adapted to provide support for a sheet of abrasive material positioned on the back up pad; and

said edge surface of said magnetized layer is beveled inwardly from the second surface of the layer of foam toward said support surface to help hold the magnetized layer in the layer of foam.

4,607,465

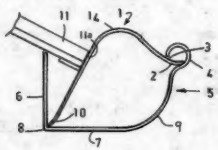
LEAF EXCLUDER FOR RAIN WATER GUTTERING

Graham K. Hopkins, 1a Cobran Road, Cheltenham, New South Wales 2119, Australia

Filed Jan. 8, 1985, Ser. No. 690,322

Int. Cl.[4] E04D *13/00*

U.S. Cl. 52—12 **5 Claims**



1. A leaf excluder for a rain water guttering of channel for having a rear wall with a lower edge joined to a guttering bottom to provide a rear corner of the guttering and a front wall joined to the guttering bottom and having a free edge terminating in a curled bead and which when in use will have the ends of tiles or like roof cladding overlapping the guttering rear wall so as to deposit rain water over and forward of said guttering rear wall; and leaf excluder comprising a strip of flexible resilient sheet-like material with a plurality of bead engaging fingers along and projecting from a one edge and a plurality of water passing slots in the strip at an angle to the length dimension of the strip; the width of said strip as defined between the said one edge and an opposite edge of said strip exceeding the distance between said guttering rear corner and that portion of the bead proximal thereto by an amount such that when the leaf excluder is located in a gutting with said bead engaging fingers engaging said bead and said opposite edge engaged in said rear corner of said guttering there will be an upwardly bent barrier portion of said strip extending at least as high as the top of said roof cladding ends and presenting a face incorporating said slots, said face being disposed substantially at right angles to and in abutting relationship with said ends of the roof cladding over the length of said guttering.

4,607,466

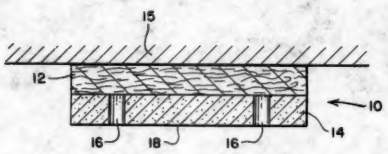
METHOD AND APPARATUS FOR CONTROLLING REVERBERATION OF SOUND IN ENCLOSED ENVIRONMENTS

John C. Allred, 798 47th St., Los Alamos, N. Mex. 87544

Filed May 29, 1984, Ser. No. 614,653

Int. Cl.[4] B24B *5/00*; B32B *3/26*; E04B *1/82*

U.S. Cl. 52—144 **21 Claims**



1. An acoustic panel for the absorption of low frequency sounds within an enclosed environment comprising:

a porous layer of fibrous material; and

a generally rigid layer of cement material affixed to said porous layer of fibrous material, said generally rigid layer including at least one passageway opening on one side of said rigid layer, said passageway extending through said rigid layer, said passageway opening about the other side of said rigid layer adjacent to said porous layer of fibrous material.

4,607,467

UNDERGROUND ROOM SUCH AS NOTABLY A CELLAR

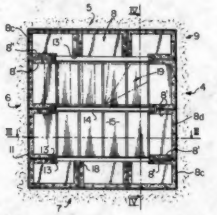
Paul M. M. Roux, 30, rue de Damiette, 91190 Gif-sur-Yvette, France

Filed Jan. 17, 1983, Ser. No. 458,329

Claims priority, application France, Apr. 27, 1982, 82 07292

Int. Cl.[4] E02D *17/04*; E04H *9/12*

U.S. Cl. 52—169.6 **13 Claims**



1. An underground room, having a form which is generally prismatic, cubic or rectangular parallelepipedic, and including a floor, a ceiling, and lateral walls formed by stacked box-sections prefabricated from concrete and serving as storage bins each having at least two vertical lateral walls, the entire assembly being accommodated in an excavation sunk under a floor slab of a structure, said excavation being lined with a fluid-tight enclosure and provided with a bed of sand,

wherein said room comprises vertical posts or columns, extending from said floor to the level of the ceiling and being fixed and maintained in place therebetween, said vertical columns being substantially T-shaped in cross-section and constituting means for withstanding earth pressure, and wherein

said vertical lateral walls of said spaced-box sections forming storage bins having vertical edges bearing against said columns, with said box-sections forming supporting walls to withstand the earth pressure, said vertical edges of two adjacent box-sections of the same level forming a slot in

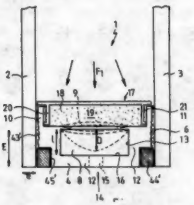
which is accommodated a portion forming a tenon of one T-shaped column.

4,607,468

ELEMENT FOR DOOR OR WINDOW OR OUTSIDE-WALL PANEL FORMED IN PARTICULAR OF TWO FLAT PANELS SEPARATED BY A GAS WITH COMPENSATED VARIATION OF VOLUME

Claude Paquet, Laval, France, assignor to Vitrages Isolants de l'Ouest, France

Filed Sep. 17, 1984, Ser. No. 651,254
Claims priority, application France, Sep. 15, 1983, 83 14724
Int. Cl.[4] E06B *7/12*
U.S. Cl. 52—172 **10 Claims**



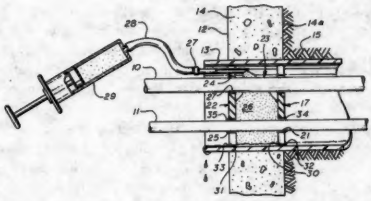
1. An element for doors, windows or outside-wall panels which is flat and formed of at least panels (2, 3) which are spaced apart from each other and connected together by a peripheral spacer (4) and forms an inner free chamber therebetween, the inner free chamber (5) being filled with gas, comprising integrated means (7) which make it possible to take up variations in volume of the gas, consisting of an automatically variable volume placed within the inner free chamber, the automatically variable volume being formed, on the one hand, by the peripheral spacer and, on the other hand, by a deformable flexible membrane (9) wherein the membrane forms an integral part of the spacer.

4,607,469

SEAL FOR WATER PROOFING A UTILITY LINE CONDUIT AND A METHOD OF FORMING THE SEAL

George W. Harrison, Houston, Tex., assignor to Team, Inc., Alvin, Tex.

Continuation-in-part of Ser. No. 567,651, Jan. 3, 1984, abandoned. This application Apr. 16, 1984, Ser. No. 600,526
Int. Cl.[4] B02D *29/10*; B04F *17/08*; B32B *31/06*
U.S. Cl. 52—220 **10 Claims**



1. A seal against flow of ambient water through a designated confined cell space within a conduit having at least one electrical cable extending through the conduit, comprising in combination:

(a) a sealant body confined within said cell space as

(1) partially a paste-consistency liquid disposed within said body wherein no reactant has reached said sealant, and

(2) partially a cured flexible solid in the semblance of a rind on the exterior surface of said body or in leakage protrusions from said sealant body into leakage spaces wherein said sealant has been in contact with a water reactant;

(b) solid rubber disc damming means loosely fitted within said conduit and around said electrical cable and respectively spaced apart to define the ends of said confined cell space wherein said sealant has formed a rind of sealant protruding into spaces between said conduit and said damming means and also between said electrical cable and said damming means; and

(c) said sealant body being adapted, in the event that relative movement occurs between any of said conduit, said damming means and said electrical cable sufficient to disrupt a portion of the seal effected by said rind, to leak a measure of the liquid portion of said sealant body into the disrupted portion of said rind sufficient to fill any portion subject to leakage with said measure contacting said reactant and subsequently curing into a flexible solid.

4,607,470

PRE-STRESSED CONSTRUCTION ELEMENT

Fred L. Ecker, Sierra Madre, Calif., assignor to Concrete Systems, Inc., Azusa, Calif.

Filed Jan. 28, 1985, Ser. No. 695,393
Int. Cl.[4] E04C *3/10*
U.S. Cl. 52—226 **4 Claims**

1. A pre-stressed construction element comprising:

a ridged member having a constant, I-shaped cross-section defined by a web spanning an upper and a lower flange, said member having a horizontal midplane disposed equidistant between said flanges;

a box disposed at each end of the member, each box having a pair of spaced plates extending between the flanges and projecting outwardly from the web;

a plurality of tensioned tendons disposed on each side of the web and connected between said boxes to place the member in compression, said tendons arranged in a spaced pattern at said plates at least one of said tendons disposed between the midplane and upper flange; and

at least one support disposed intermediate of and at each side element, the support including a tube disposed to project outwardly from the web at a location near the lower flange and a strengthening strut interconnected between said tube and web, said tendons deflected by and imposing an upward force upon said support tube and strut and member.

4,607,471

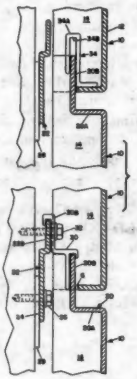
PANEL WALL SYSTEM

Robert W. Olsen, New Providence, N.J., assignor to Construction Specialties, Inc., Cranford, N.Y.

Filed Nov. 8, 1984, Ser. No. 669,582
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—509 **9 Claims**

1. A building panel wall assembly comprising a multiplicity of pan-like rectangular panels arranged side by side and end to end in closely spaced-apart relation, each panel having a principal wall constituting a portion of the exterior building wall, a side flange along each side edge of the principal wall extending toward the building structure, a bottom flange along the bottom edge of the principal wall extending toward the building structure, and a generally L-shaped top flange along the upper edge of the principal wall and including a first leg por-

tion extending from the principal wall toward the building structure and a second leg portion extending upwardly from the first leg portion, affixation means at the horizontal juncture between each pair of vertically adjacent panels for affixing either the top flange of the lower panel of the pair or the bottom flange of the upper panel of the pair to the building structure, slip joint means for joining the bottom flange of each panel to the top flange of the adjacent panel below it for relative movement of said top and bottom flanges in the plane of



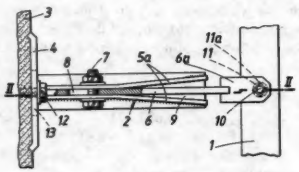
the second leg portion, the second leg portion of the top flange of each panel extending upwardly behind and a substantial distance above the bottom flange of the adjacent panel above it to form a barrier against intrusion of water at the horizontal junctures between panels, and a drainage gutter mounted to the building and extending along the vertical juncture between each pair of laterally adjacent panels and closely underlying the edges of the spaced-apart flanges of a pair of horizontally adjacent panels.

4,607,472

ANCHOR FOR SECURING STONE PLATES TO A WALL

Ferdinand Pointner, Tagwerkerstrasse 34, 4810 Gmunden, Austria

Filed Jun. 7, 1985, Ser. No. 742,283
Claims priority, application Austria, Jun. 8, 1984, 1886/84
Int. Cl.[4] E04N *1/00*; E04B *1/38*
U.S. Cl. 52—698 8 Claims



1. In an anchor for securing stone plates to a wall, comprising

a holder,

fixing means for fixing said holder to a wall disposed on one side of said holder,

a carrier, which is adjustably supported by said holder and extends from said holder on the opposite side thereof and has a free end portion remote from said holder, and

a mandrel carried by said carrier at said free end portion and adapted to be inserted into bores formed in adjacent edge faces of said stone plates,

the improvement residing in that

said holder comprises a base plate provided with said fixing means and two transversely spaced apart fixing legs protruding from said base plate on said opposite side and having free end portions which are remote from said base plate and diverge toward their free ends, said legs also having parallel portions extending between said free end portions and said base plate and formed with coaxial holes, and a crosspiece plate connecting said free end portions

said carrier comprises a tongue plate, which is sandwiched between said parallel portions and clear of both said free end portions and has two mutually opposite side edges, one of which is in sliding contact with said crosspiece plate, said tongue being formed with a slot extending parallel to said parallel portions and transversely aligned with said coaxial holes, and

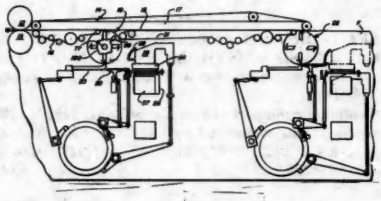
a clamp screw extending through said coaxial holes and said slot and adapted to fix said tongue to said fixing legs.

4,607,473

APPARATUS FOR HANDLING FLAT, FLEXIBLE WEB PRODUCTS

Dennis W. Ehlus, Green Bay, and Patrick J. Williams, Hobart, both of Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Filed Nov. 1, 1984, Ser. No. 667,090
Int. Cl.[4] B65B *57/00*
U.S. Cl. 53—54 6 Claims



6. Apparatus for alternately developing stacks of plastic bags for folding and cartoning one stack while the other is being developed comprising a frame, upper and lower belt systems movably mounted on said frame defining a path for advancing bags sequentially therealong, said lower belt system being interrupted at one location in said path, a first bag gripping means rotatably mounted in said frame and arranged to intersect said path at said location, a plurality of grippers on said gripping means each having a closeable jaw for positively clamping bags in sequence, cam means on said frame for positioning said jaws in open position as each jaw passes said path location and promptly thereafter closing said jaws to positively grip a predetermined number of bags in sequence, and control means on said frame for adjusting said cam means for closing said jaws prior to reaching said path location so that bags are conveyed ungripped through said location by said upper belt system to a second gripping location in said path, said second gripping location having grippers to grip said previously ungripped bags and bag folding and cartoning means on said frame adjacent said first bag gripping means.

4,607,474

SORTING ARTICLES FROM BULK

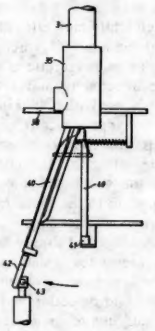
Sidney H. Jarvis, London, England, assignor to LRC Products Limited, London, England

Filed Sep. 18, 1985, Ser. No. 777,258

Claims priority, application United Kingdom, Sep. 21, 1984, 8423940

Int. Cl.[4] B65B *63/04*

U.S. Cl. 53—117 12 Claims



1. An apparatus for sorting and preparing condoms for packaging, comprising a device for separating individual condoms from a bulk supply of condoms, a roll-up device for receiving a separated condom and rolling-up the condom ready for packaging, and pneumatic conveying means for transferring a separated condom from the separating device to the roll-up device, the pneumatic conveying means delivering the condom directly to the roll-up device ready to be rolled-up thereby;

wherein the conveying means has an outlet through which the condom is delivered closed end first, and the rolling-up device is aligned with said outlet at a loading station, the conveying means being arranged to deliver the condom onto the roll-up device at a sufficient speed for the condom to become turned inside out over the roll-up device;

wherein the roll-up device comprises a plurality of elongated elements coupled for relative movement between a first position in which said elements are substantially parallel for receiving a condom delivered over one end thereof, and an expanded position in which the elements are spread apart and converge towards said one end, whereby movement of the elements from the first position to the second position causes a condom received thereon to become rolled-up towards said end.

4,607,475

DEVICE FOR FORMING GROUPS OF CIGARETTES IN PACKAGING MACHINES

Renato Manservisi, Bologna, and Bruno Bagnaresi, Imola, both of Italy, assignors to SASIB S.p.A., Bologna, Italy

Filed Dec. 4, 1984, Ser. No. 678,213

Claims priority, application Italy, Dec. 20, 1983, 12701 A/83

Int. Cl.[4] B65B *19/04*

U.S. Cl. 53—150 9 Claims

1. A device for use with a cigarette packaging machine to form orderly groups of cigarettes, each group having a plurality of "n" layers, comprising:

a plurality of collecting containers;

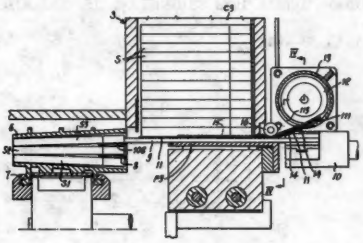
means for moving the containers along a path in an advance direction, the movement of the containers being intermittent so that there are dwell periods in the advance thereof;

a series of "n" feeding station means adjacent the path for forming cigarette layers, each feeding station means including

means defining a plurality of cigarette-feeding channels having bottom outlets for forming a cigarette layer below the bottom outlets, the feeding channels being mutually adjacent and substantially vertical, with cigarettes descending in single columns through respective channels,

means for ejecting a layer of cigarettes beneath the bottom outlets to transfer the ejected layer into a container dwelling adjacent the respective feeding station means, the layer of cigarettes being ejected in the axial direction of the cigarettes,

an interceptor that is movable between an active position in which the interceptor prevents cigarettes from exiting the bottom outlets of the feeding channels, and a rest position in which the interceptor permits cigarettes to flow from the bottom outlets of the feeding channels, and



moving means for moving the interceptor between its active and rest positions, and

control means for actuating the moving means of successive feeding station means sequentially during start-up of the cigarette packaging machine and during a scheduled shut-down thereof to avoid partially filled containers, for moving interceptors one after the other from their active positions to their rest positions during start-up as a predetermined initial container advances from one feeding station means to the next, and for moving the interceptors one after the other from their rest positions to their active positions during a scheduled shut-down as a predetermined final container advances from one feeding station means to the next.

4,607,476

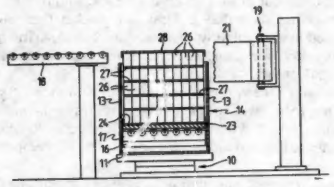
METHOD AND APPARATUS FOR STRETCH WRAPPING UNSTABLE LOADS

Cyrus B. Fulton, Jr., 5035 Wagon Trace, Birmingham, Ala. 35243

Filed Jul. 12, 1985, Ser. No. 754,211

Int. Cl.[4] B65B *13/02*

U.S. Cl. 53—399 11 Claims



7. A method of spiral stretch wrapping an unstable load without side supports utilizing a vertically aligned film dispenser, a turntable for rotating said load spaced from said dispenser, an upwardly opening container for housing said load preparatory to wrapping said load and an elevator for urging said load upwardly out of said container comprising the steps of:

(a) palletizing said load within said container;

(b) rotating said container and load about a vertical axis;

(c) dispensing said film in partial engagement with the exterior surface of the upper periphery of said container; and

(d) urging said load upwardly out of said rotating container whereby said load engages said film and is wrapped by said upward movement of said load causing said film to transfer from said container to said load.

4,607,477

CIGARETTE PACKING MACHINES

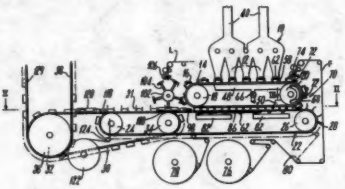
Dennis Hinchcliffe, London, England; Francis A. M. Labbe, Neuilly-sur-Seine, France, and Desmond W. Molins, London, England, assignors to Molins PLC, London, England

Filed Apr. 11, 1984, Ser. No. 599,114

Claims priority, application United Kingdom, Apr. 15, 1983, 8310304; Apr. 15, 1983, 8310305; Apr. 15, 1983, 8310306

Int. Cl.[4] B65B *19/04*

U.S. Cl. 53—444 **13 Claims**



1. Apparatus for packing batches of cigarettes in wrappers, said batches being of rectangular shape and having a pair of large faces, said apparatus comprising:

(a) a wrapper conveyor arranged to travel along a first path and having a plurality of regularly spaced U-shaped compartments each having a base corresponding to said large faces of said batches, the longitudinal axis of said base being transverse to the direction of movement of said wrapper conveyor, and having a pair of side walls which lie transverse to the direction of movement of said wrapper conveyor;

(b) wrapper feed means for feeding a wrapper in a U-shape into each of said compartments with opposite sides of said U-shaped wrapper extending along said side walls respectively;

(c) a batch conveyor arranged to travel along a second path, a portion of said second path being adjacent a portion of said first path, and having a plurality of pockets spaced from each other by a distance corresponding to the distance between adjacent of said compartments on said wrapper conveyor, each pocket being adapted for carrying a batch of cigarettes and having a base corresponding to said large faces of said batches, the longitudinal axis of said base being transverse to the direction of movement of said batch conveyor, said batch conveyor being movable such that at least one pocket thereon may be maintained in alignment with a respective compartment on said wrapper conveyor along said portions of said respective first and second paths;

(d) transfer means operable to transfer a batch of said cigarettes from each pocket into a wrapper in a respective compartment while said pocket and respective compartment are aligned along said portions of said respective first and second paths;

(e) said wrapper and batch conveyors including means to locate the planes of said base of each compartment and said base of each respective pocket while said compartments and pockets are aligned along said portions of said respective first and second paths, at an obtuse angle at least at the commencement of operation of said transfer means transferring a cigarette batch therebetween such that the edge of the portion of a wrapper adjacent the base of each compartment will clear the edges of said cigarette batch; and

(f) means associated with each compartment for folding the two sides of each wrapper over the respective batch during said transfer but after said transfer has commenced.

13. Apparatus for packing groups of cigarettes, each group as packed containing a predetermined number of cigarettes, said apparatus comprising a conveyor for conveying groups of cigarettes in succession along a path, each group comprising closely spaced cigarettes moving transversely to their axes along said path, inspection and rejection means for rejecting faulty cigarettes from said conveyor to form voids in the groups from which faulty cigarettes have been rejected, detection means for detecting said voids in said groups, supply means for supplying one cigarette at a time for filling a void, transfer means connected to and actuated by the detection means in timed response with a void in a group for transferring a cigarette from the supply means to the conveyor to fill the void in the group, said transfer means including a first rotor having a single cigarette support on its periphery for receiving a cigarette from the supply means and a stepper motor to accelerate the rotor up to the speed of the conveyor, a refeed conveyor for periodically feeding a group of cigarettes from said conveyor means to said supply means, sensing means for sensing when the cigarettes in said supply means fall below a predetermined level, and means connected to and actuated by the combination of said detection and sensing means to select and divert from said conveyor downstream of said rejection means to said refeed conveyor a group containing a void which would otherwise be packed as a group containing less than said predetermined number of cigarettes.

4,607,478

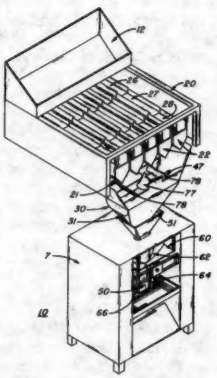
APPARATUS FOR PACKAGING BULK MATERIALS COMPOSED OF ELONGATED PIECES

Steven C. Maglecic, 4041 S. Mitchell, Boise, Id. 83709

Filed Feb. 15, 1985, Ser. No. 702,352

Int. Cl.[4] B65B *1/32*

U.S. Cl. 53—502 **13 Claims**



1. A packaging device for bulk materials comprised of a multiplicity of elongated pieces, said packaging device comprising:

means for quantitatively measuring selected amounts of said materials;

a transition chute for receiving said materials and guiding said materials to a fill tube, said chute including at least one stream-out member to substantially separate material pieces from one another and to cause free-fall of the pieces for substantial alignment thereof;

a fill tube for receiving the substantially aligned pieces; and

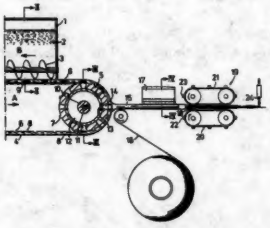
packaging means for enveloping the substantially aligned material received from said fill tube in bagging material.

4,607,479

APPARATUS FOR PACKAGING GIVEN QUANTITIES OF SNUFF

Günther Linden, Huddinge, Sweden, assignor to Svenska Tobaks AB, Stockhoom, Sweden

Filed Nov. 23, 1984, Ser. No. 674,507
Claims priority, application Sweden, Dec. 14, 1983, 8306913
Int. Cl.[4] B65B *9/08, 9/20*
U.S. Cl. 53—530 6 Claims



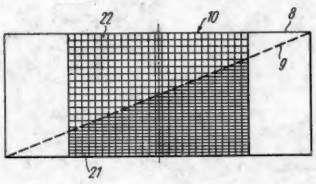
1. Apparatus for packaging snuff portions, comprising a snuff store (2), portioning means (3,9; 3,26) for transferring snuff from said store to a portion conveyor (4; 25) having portion pockets (9; 26) in the form of through-passing openings in the portion conveyor, arranged to transfer the portion pockets to a discharge station for sequentially transferring measured snuff portions by means of pneumatic means (11,14) to a movable packaging band (16), in which each individual snuff portion is enclosed by means of sealing means (17, 20,21), characterized in that the portioning means (3,9; 3,25) are arranged to compress the snuff portion in a respective portion pocket (9; 25); and in that the pneumatic means (11,14) are arranged to exert on the end part of the compressed snuff portion at the discharge station a drive force for blowing the portion to an intended position on the packaging band.

4,607,480

AXIAL-FLOW COMBINE

Jury N. Yarmashev; Vladimir A. Zapandi, and Valentin N. Tkachev, all of Taganrog, U.S.S.R., assignors to Glavnoe Spetsializirovannoe Konstruktorskoe Bjuro po Mashinam Uborki Zernovykh Kultur i Samokhodnykh Shassi, Taganrog, U.S.S.R.

Filed Apr. 16, 1985, Ser. No. 723,870
Int. Cl.[4] A01F *12/26*
U.S. Cl. 130—27 T 3 Claims



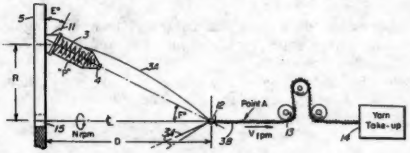
1. An axial flow combine comprising:
a rotating rotor having an axis arranged along the direction of combine movement;
a stationary cylindrical casing embracing said rotor;
helical guide fins mounted in the upper part of said casing;
a grate-type concave mounted in a threshing zone in the lower part of said casing;
said concave made with openings of different open area;
a portion of said concave having openings of smaller size, which concave is defined, with respect to the direction to combine movement, by a front edge of said concave and an imaginary extension of a helical line extending inwardly from said guide fins onto said concave, said portion of said concave increasing in transverse extent in the direction of rotation of said rotor, the remainder of said concave having openings of larger size;
a conveyor mounted under said concave to transport threshed product separated through said concave; and
a cleaning mechanism installed adjacent to the conveyor.

4,607,481

PROCESS FOR SPIRAL WRAPPING REINFORCEMENT FILAMENTS

Gilbert C. Bell, and Harry W. Stanhope, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 415,100, Sep. 7, 1982, Pat. No. 4,516,394.
This application Nov. 29, 1984, Ser. No. 676,442
Int. Cl.[4] D07B *3/06;* B65H *81/06*
U.S. Cl. 57—3 3 Claims



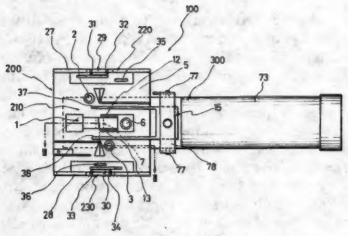
1. An improved process for forming a spiral wind of filamentary reinforcing material by end-unwinding at least one package of yarn eccentrically mounted on a centrally supported rotatable disc of a spiraling machine, and rotating the disc wherein the improvement comprises:
unwinding a package comprising a rotatable support and filamentary yarn wound around the support, the filamentary yarn having a twist of less than 5 tpi and the rotatable support comprising a king spool, and rotating said package about the disc's center line at least 600 rpm.

4,607,482

FLUID YARN SPLICING DEVICE

Hiroo Otoshima, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Feb. 12, 1985, Ser. No. 700,687
Claims priority, application Japan, Feb. 16, 1984, 59-27877
Int. Cl.[4] D01H *15/00;* B65H *69/06*
U.S. Cl. 57—22 10 Claims



1. A fluid yarn splicing device comprising:
a fluid treatment unit including a yarn splicing member secured on a block having a yarn splicing hole therein, a fluid exit opening into said yarn splicing hole, and a first fluid supply passage communicating with said fluid exit,
a yarn end control unit adjacent said fluid treatment unit and having a yarn cutting device, a yarn handling lever disposed adjacent said yarn splicing member, two swingable

hands capable of being positioned between said yarn cutting device and said yarn splicing hole and operating members for driving said yarn cutting device and said yarn handling lever, and

a driving section for supplying compressed fluid to said fluid treatment unit and for driving said operating members of said yarn end control unit,

wherein said fluid treatment unit further includes a second fluid supply passage, untwisting nozzles for untwisting the ends of yarns to be spliced, said untwisting nozzles being disposed on opposite sides of said yarn splicing member, said untwisting nozzles being formed in said block and communicating with said second fluid supply passage, whereby compressed fluid may be directed thereinto.

9. A device for splicing yarn ends comprising:

fluid treatment means for subjecting said yarn ends to the action of compressed fluid,

control means for positioning said yarn ends with respect to said fluid treatment means,

a control element in mechanical communication with said control means and having at least one fluid passage therein through which fluid may be directed to said fluid treatment means;

drive means for moving said control element at a regulated rate with respect to said control means and said fluid treatment means;

whereby said regulated movement of said control element governs operation of the said fluid treatment means and said control means.

4,607,483

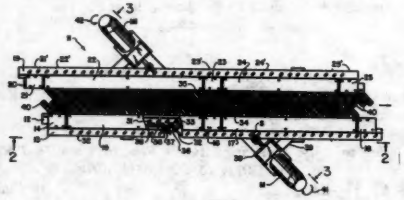
METHOD AND APPARATUS FOR TWISTING AND ADVANCING STRAND MATERIAL

Albert E. Siecke, Westfield, N.J., and Edward Janos, New York, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 1, 1985, Ser. No. 718,586

Int. Cl.[4] D02G *1/08*; D07B *3/00*

U.S. Cl. 57—334 **20 Claims**



1. A method of advancing and twisting a plurality of generally parallel, endless strands into a rope configuration comprising the steps of providing a conveyor means having at least two side walls, one side wall defining a series of side-by-side rollers, skewing a rotational axis of each roller to a predetermined angular position relative to horizontal and vertical planes, rotating the rollers in unison about their axes in a predetermined direction, feeding said strands into said conveyor means and into frictional contact with said rollers whereby the rollers by virtue of their skewed disposition and direction of rotation are effective to develop two force components, one component operating to twist the strands into a rope while the other component operates to advance the twisted strands through the conveyor means.

12. A conveyor means for simultaneously advancing and twisting a plurality of strands into a rope, comprising

an elongated trough having at least two walls joined to define a linear path, a first wall including a plurality of aligned rollers having axes of rotation bearing a predetermined angular relationship relative to horizontal and vertical planes, power means for driving said rollers in unison in a predetermined direction, and means for feeding said strands into said trough and into frictional contact with said rollers, said rollers being effective, by virtue of their angular position and direction of rotation, to advance the strands while twisting the strands into a rope.

4,607,484

FRICTION ROTOR FOR THE FALSE-TWISTING OF SYNTHETIC THREADS

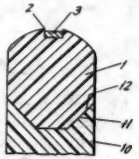
Friedrich Schuster, Hammelburg, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Nov. 8, 1985, Ser. No. 796,547

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1984, 3447146

Int. Cl.[4] D02G *1/08, 1/04*

U.S. Cl. 57—337 **20 Claims**



1. A friction rotor for friction false-twisting of synthetic threads, or the like, the rotor including an elastic material friction ring on and defining the circumference of the rotor; at least one annular element disposed on and around the friction ring for restraining the friction ring from lifting off the rotor upon high speeds of rotor rotation.

4,607,485

FEED ARRANGEMENT FOR AN OPEN-END FRICTION SPINNING MACHINE

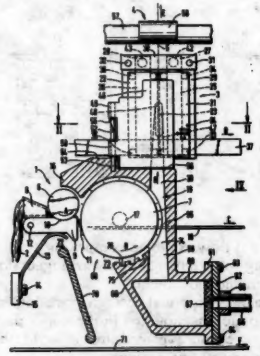
Fritz Stahlecker, Joseph-Neidhart-Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,853

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402566

Int. Cl.[4] D01H *7/888, 7/898*

U.S. Cl. 57—401 **22 Claims**



1. An open-end friction spinning unit arrangement comprising:

drivable friction surface means defining a yarn formation zone,

fiber feeding and opening means including opening roller means surrounded by an opening roller housing means with discharge opening means for impurities and fiber feeding duct means extending from adjacent the opening roller means toward the yarn formation zone,

suction device for applying suction forces for holding the fibers and forming yarn in the yarn formation zone,

and compressed air duct means connected to the fiber feeding duct means in the area of the circumference of the opening roller means, said comperssed air duct means being aimed into the fiber feeding duct means,

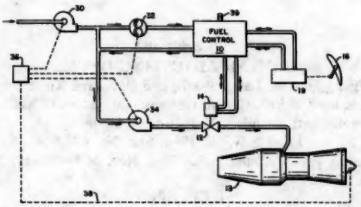
wherein the discharge opening means is arranged at a distance in front of the compressed air duct means with respect to the transport direction of the fibers.

4,607,486

CENTRIFUGAL MAIN FUEL PUMP

Edward F. Cole, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 2, 1983, Ser. No. 557,557
Int. Cl.⁴ F02C *7/236*
U.S. Cl. 60—734 **2 Claims**



1. For a gas turbine power plant having a fuel supply and a fuel metering valve and variable geometry for the power plant including servo actuating mechanisms for said fuel metering valve and variable geometry, a fuel pumping system to supply pressurized fuel for the servo actuating mechanisms and for the engine working fluid medium, said pumping system including a centrifugal pump solely supplying the fuel to said fuel metering valve to be delivered to the power plant for its working fluid medium, a positive displacement pump in parallel with said centrifugal pump and solely to supply pressurized fuel to said servo actuating mechanisms for the fuel metering valve and for the variable geometry, and a boost pump means disposed in serial relationship with said positive displacement pump and said centrifugal pump for augmenting the pressure supplied by the positive displacement pump and the centrifugal pump during predetermined operating conditions of said power plant whereby the combined boost pump and centrifugal pump capability is sufficient to satisfy the vapor to liquid ratio requirements of said power plant during its entire operating envelope.

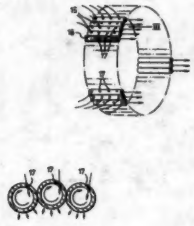
4,607,487

COMBUSTION CHAMBER WALL COOLING

John R. Tilston, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 447,804, Dec. 8, 1982, abandoned. This application Dec. 26, 1984, Ser. No. 686,384
Claims priority, application United Kingdom, Dec. 31, 1981, 8139167
Int. Cl.⁴ F02C *1/00*; F02G *3/00*; F23M *9/00*
U.S. Cl. 60—752 **5 Claims**

1. A gas turbine combustion chamber including a combustion chamber wall wherein at least part of the wall is formed by a plurality of generally cylindrical touching tubes forming cooling passages which extend around, and are generally parallel to, the chamber axis, each of said passages having a series of air inlets disposed along the passage and tangentially directed thereinto, and means for directing cooling air into the series of air inlets in each said passage to set up a forced vortex therein, the passages having open ends which exhaust directly into the combustion chamber.

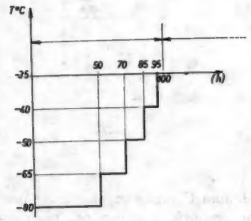


4,607,488

GROUND CONGELATION PROCESS AND INSTALLATION

Pierre Karinthi, Jouy-en-Josas; Maurice Gardent, Herbeys; Colette Régniér, Echirolles, and Jean Tuccella, Grenoble, all of France, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed May 28, 1985, Ser. No. 738,384
Claims priority, application France, Jun. 1, 1984, 84 08646
Int. Cl.⁴ F17C *1/00*
U.S. Cl. 62—45 **14 Claims**



8. A process for the congelation of ground, comprising cooling a refrigerant liquid by indirect heat exchange with a cryogenic fluid, then circulating said liquid in a plurality of probes driven into the ground and varying the temperature of the liquid circulating in each said probe relative to the temperature of the liquid circulating in the other said probes such that said temperature varies directly as the rate of congelation of the ground adjacent each said probe.

4,607,489

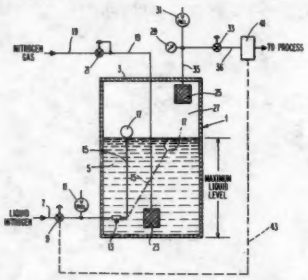
METHOD AND APPARATUS FOR PRODUCING COLD GAS AT A DESIRED TEMPERATURE

Martin A. Krongold, Aston, Pa., assignor to MG Industries, Valley Forge, Pa.

Filed May 21, 1985, Ser. No. 736,387
Int. Cl.⁴ F17C *13/02*
U.S. Cl. 62—49 **22 Claims**

1. A method of producing a cold gas at a desired temperature, comprising the steps of:

(a) directing a gas to be cooled through a bath of a cryogenic liquid,



(b) maintaining the depth of the bath at a predetermined level, wherein the temperature of the gas is controlled by controlling the level of the bath, and

(c) withdrawing cooled gas from the region above the bath.

4,607,490

HELIUM II PHASE SEPARATOR

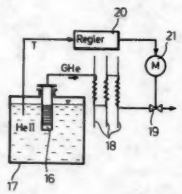
Albert Seidel, Siegertsbrunn; Hartmut Neuking, and Ernst Blenninger, both of Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed May 6, 1985, Ser. No. 731,108

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417055

Int. Cl.[4] F17C *7/02*

U.S. Cl. 62—51 15 Claims



1. Helium II phase separator for use with a bath of liquid helium, comprising a member insertable into the bath, said member having a portion with spaced-apart plate members defining a plurality of substantially equal flow area passageways, and a gas take-off line connected to said member for the taking off of of gaseous helium being connected to said equal flow area passageways.

4,607,491

COOLING TRAP FOR VACUUM

Hajime Ishimaru, 128-102, Namiki 2-chome, Sasage 1352, Sakura-mura, Niihari-gun, Ibaraki-ken; Masao Miyamoto, and Shojiro Komaki, both of 31-1, Kameido 6-chome, Koto-ku, Tokyo, all of Japan

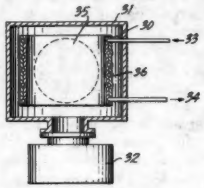
Filed Jan. 24, 1985, Ser. No. 694,412

Claims priority, application Japan, Jan. 27, 1984, 59-13999

Int. Cl.[4] B01D *8/00*

U.S. Cl. 62—55.5 20 Claims

1. A vacuum cooling trap for use in a vacuum chamber comprising: a laminated structure comprised of a pair of plates bonded together in face-to-face contacting relation, the plates being composed of metal of high thermal conductivity, and the plates having aligned confronting conduit portions which jointly define a conduit within the laminated structure for



circulating a cooling medium through the laminated structure during use of the vacuum cooling trap.

4,607,492

LINEAR ADJUSTING DEVICE

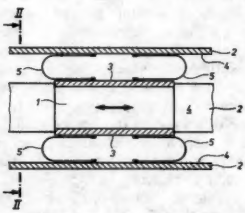
Wolfgang Demus, Langenbach, and Reinhard Katterloher, Munich, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 673,044

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343340

Int. Cl.[4] B01D *8/00*

U.S. Cl. 62—55.5 9 Claims



1. A linear adjusting device, especially for cryogenic temperatures and vacuum conditions comprising:

a carrier body defining a linear adjusting path;

an adjusting body being adjustable on said carrier body along said linear adjusting path;

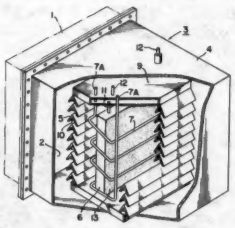
a plurality of strip-like bending springs each being bent at least approximately into a U-like shape and placed between said carrier body and adjusting body, wherein the U-legs of each of the U-shaped bending springs extend longitudinally along the adjusting path, and at their free ends, one of the legs of each being spring is fixed to said carrier body and the other leg to said adjusting body, respectively, said bending springs being arranged in at least two groups of bending springs spaced apart by a given distance along said adjusting path, the bending springs of at least one of said groups of bending springs being arranged in such a way that the vertex lines of the U-bends thereof are directed—when seen in a cross section perpendicular to said adjusting path—at oblique angles to the vertex lines of the bending springs of another group of bending springs.

4,607,493

CRYOSORPTION PUMP

Satoru Sukenobu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 17, 1984, Ser. No. 650,860
Claims priority, application Japan, Sep. 20, 1983, 58-172182
Int. Cl.[4] B01D *8/00*
U.S. Cl. 62—55.5 6 Claims



1. A cryosorption pump for high vacuum condition to be evacuated comprising:

a container defining therein a cryopumping space connected to an opening of a chamber to be evacuated;

a cryosorption member which is located in said container and on which an adsorbent is applied;

a cryocondensation member located in said container so as to surround said cryosorption member;

means for creating a magnetic field outside of said cryosorption member;

means for supplying cooling medium to said cryosorption and cryocondensation members; and

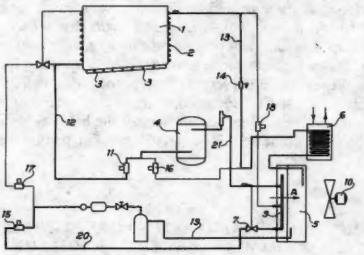
means connected to said container for exhausting outwardly gases in said container.

4,607,494

APPARATUS FOR THE PASTEURIZATION OF ALIMENTARY MIXTURES

Alberto Cipelletti, Guardamiglio, Italy, assignor to Ditta Alberto Cipelletti, Italy

Filed May 20, 1985, Ser. No. 735,875
Claims priority, application Italy, May 18, 1984, 21845/84[U]; May 18, 1984, 21846/84[U]
Int. Cl.[4] F25D *25/00*
U.S. Cl. 62—62 8 Claims



1. A process for pasteurizing an alimentary mixture in an apparatus comprising a refrigerating circuit including a compressor, a condenser, an expansion valve and an evaporator and further comprising a first vessel containing the mixture to be pasteurized and a first heat exchange coil arranged for thermal exchange with the mixture in said first vessel, said process comprising the steps of:

a. heating the mixture contained in said first vessel by circulating refrigerant from said compressor through said heat exchange coil, then through said condenser, then through said expansion valve, then through said evaporator and then back to said compressor; and

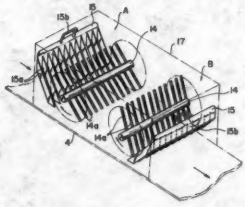
b. cooling the mixture contained in said first vessel by circulating refrigerant from said compressor through said condenser, then through said expansion valve, then through said first heat exchange coil, then through said evaporator, and then back to said compressor.

4,607,495

METHOD OF AND APPARATUS FOR DISINTEGRATING LUMPS OF BOILED RICE WHILE COOLING AND FREEZING

Kiyokatsu Fujimoto, Oomiya; Kazunobu Shibuya, Tokyo, and Tetsukazu Urata, Iruma, all of Japan, assignors to Toyo Sanso Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,813
Claims priority, application Japan, Apr. 26, 1984, 59-84631
Int. Cl.[4] F25D *13/06*
U.S. Cl. 62—63 1 Claim



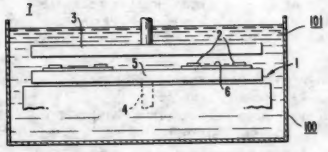
1. A method of disintegrating lumps of boiled rice which comprises (a) cooling and freezing boiled rice to a temperature between 10° C. to −30° C. while carrying the boiled rice as a layer on a belt conveyor, (b) colliding the lumps of boiled rice on the belt conveyor against a stationary comb and thereby separating them while cooling and freezing, and (c) beating the lumps of boiled rice with a rotary comb rotating at a circumferential velocity of from 1 to 10 m/sec, the beating step occurring at a time chosen from at least one of before, during and after the separating step by the stationary comb.

4,607,496

METHOD OF HOLDING AND POLISHING A WORKPIECE

Yoshiaki Nagaura, No. 391-2, Tonoharu, Oaza Chikushino-shi, Fukuoka-ken, 818, Japan

Continuation-in-part of Ser. No. 518,105, Jul. 28, 1983, abandoned. This application Jul. 23, 1984, Ser. No. 632,693
Claims priority, application Japan, Jul. 29, 1982, 57-134495; Aug. 12, 1982, 57-141369; Aug. 26, 1982, 57-149600; Sep. 2, 1982, 57-154450
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—64 3 Claims



1. A method of holding and working a workpiece comprising the steps of:

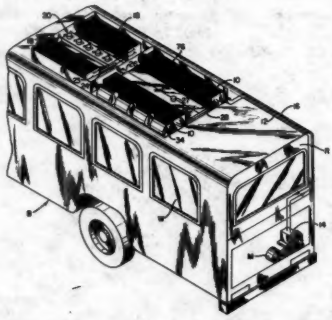
providing a freezable liquid impregnated material between a workholder and the workpiece;
freezing the liquid impregnated in the material to secure the workpiece to the workholder; and
working the workpiece.

4,607,497

ROOF-MOUNTED AIR CONDITIONER SYSTEM HAVING MODULAR EVAPORATOR AND CONDENSOR UNITS

Houshang Ferdows, Boulder, Colo.; Martin Krug, Möglingen, and Paul R. Bihl, Ditzingen, both of Fed. Rep. of Germany, assignors to Suetrak U.S.A., Denver, Colo.

Filed Dec. 20, 1983, Ser. No. 565,026
Int. Cl.[4] F25D *17/00, 23/12*
U.S. Cl. 62—179 7 Claims



1. In an air conditioner system mounted on the roof of a bus, in which the bus is characterized by having an upper relatively flat roof, a ceiling spaced beneath said roof with a return air inlet disposed in said roof intermediately between air circulating ducts, said ducts extending between said roof and ceiling for directing conditioned air into the interior of said bus, there being compressor means to draw refrigerant from evaporator coils and to discharge said refrigerant under pressure, and a condensor unit including condensor coils to receive refrigerant under pressure from said compressor means, and air circulating means for directing air across said condensor coils, the improvement comprising:

a modular evaporator unit having an outer shallow, generally rectangular housing including mutually opposed sidewalls and front and rear end walls and a base panel conforming to the contour of said roof including means for attaching said base panel to said roof whereby said return air inlet and said air circulating ducts are in communication with the interior of said evaporator housing, said evaporator coils mounted on opposite sides of said return air inlet, and heater coils extending horizontally in side-by-side relation to each of said evaporator coils on opposite sides of said return air inlet, a fresh air inlet in said rear wall of said evaporator housing, and evaporator air blower means in said evaporator housing for inducing air through said return air inlet and said fresh air inlet across said evaporator coils and heater coils for discharge through said air circulating ducts into the interior of said bus;

refrigerant lines extending between said condensor unit and said evaporator unit; and

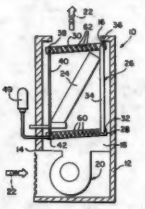
said evaporator unit including damper means to regulate the ratio of return air and fresh air induced to flow through said respective return air and fresh air outlets, said damper means including inside temperature sensing means adjacent said return air inlet and outside temperature sensing means adjacent said fresh air inlet, said damper means responsive to the temperatures sensed at said return air inlet and said fresh air inlet to regulate the ratio of return air to fresh air drawn into said evaporator housing.

4,607,498

HIGH EFFICIENCY AIR-CONDITIONER/DEHUMIDIFIER

Khanh Dinh, Gainesville, Fla., assignor to Dinh Company, Inc., Alachua, Fla.

Filed May 25, 1984, Ser. No. 614,025
Int. Cl.[4] F25D *17/02*; F28D *15/00*
U.S. Cl. 62—185 5 Claims



1. A system for controlling air temperature and humidity, comprising:

an air temperature controlling unit comprising a heat pump having a heat mode and a cooling mode, said heat pump having a housing with an air inlet and an air outlet, an air passage extending from said inlet to said air outlet, a refrigerant coil disposed in said air passage, and a blower for forcing air through said refrigerant coil from said inlet to said outlet;

a phase-change heat exchanger comprising heat pipes and including an evaporator section disposed on an inlet side of said passage, a condenser section disposed on an outlet side of said air passage, said evaporator section having a liquid refrigerant inlet and a vapor outlet, said condenser section having a vapor inlet and a liquid refrigerant outlet, said vapor inlet being at a higher level than said liquid refrigerant outlet, said liquid refrigerant inlet being connected to said liquid refrigerant outlet, and said vapor inlet being connected to said vapor outlet, and a refrigerant disposed in said heat exchanger in such quantity that said refrigerant vaporizes in said evaporator section to draw heat from air moving through said inlet side of said air passage when said heat pump is in said cooling mode, vaporized refrigerant flows to said condenser section and condenses in said condenser section to transfer heat to air passing through said outlet side of said air passage, and liquid refrigerant flows to said evaporator from said condenser, and whereby when said heat pump is in said heat mode said phase change heat exchanger acts as a thermal diode and is rendered inoperative; and

a liquid refrigerant reservoir located outside of the air stream and which has sufficient capacity to contain the liquid refrigerant and limit the pressure within the heat exchanger when the heat exchanger is subjected to high temperatures from the heating apparatus.

4,607,499

METHOD AND APPARATUS FOR ASSEMBLY OF A ROOM AIR CONDITIONER HOUSING

Theodore S. Bolton, Liverpool, and Robert J. Whitwell, Nedrow, both of N.Y. (99), assignors to Carrier Corporation, Syracuse, N.Y.

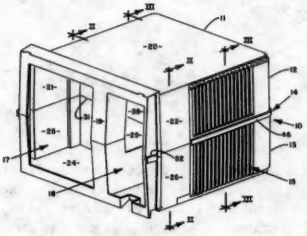
Filed Sep. 20, 1985, Ser. No. 778,113
Int. Cl.[4] F25D *23/12*
U.S. Cl. 62—262 8 Claims

1. A housing for an air conditioning unit of the type having an outdoor section and an indoor section comprising:

an upper portion having a top wall and downwardly extending side walls that define an upper rim at their lower

edges, with at least two oppositely disposed of said side walls having a flange extending outwardly and upwardly from said upper rim;

a lower portion having a bottom wall and upwardly extending side walls that define a lower rim at their upper edges, with at least two oppositely disposed of said side walls having a flange extending outwardly and downwardly from said lower rim;



said upper and lower rims being of generally the same size such that when said rims are mated together in vertical juxtaposition, said lower rim flange and said upper rim flange form a dovetail; and

channel means slideably engageable over said dovetails for securing the upper and lower portions.

4,607,500

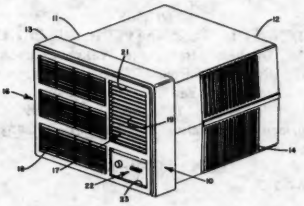
GRILLE MOUNTING FOR A ROOM AIR CONDITIONER

Theodore S. Bolton, Liverpool, and Brad G. Leech, Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 20, 1985, Ser. No. 778,114

Int. Cl.[4] F25D *23/12*

U.S. Cl. 62—262 **14 Claims**



1. In an air conditioning system of the type having indoor and outdoor sections extending longitudinally inwardly and outwardly, respectively, from a wall opening, with each section having air intake and air discharge openings, an improved grille attachment structure for covering the air intake and discharge openings of the indoor section comprising:

a planar element having vents formed therein for conducting the flow of air to the air intake opening and from the air discharge opening:

a skirt element attached to and extending rearwardly from the edges of said planar element, on at least two opposite sides thereof, to wrap around at least two sides of the indoor section, each of said at least two skirt element sides being flexibly movable in the transversely outward direction and having at least one transversely extending notch formed therein, and

at least one transversely extending flange formed on each of said at least two sides of the indoor section, and longitudinal positions corresponding to those of said notches when the grille structure is in place, said flanges being engageable in said notches when said skirt element sides are flexed transversely outwardly and then released transversely inwardly to thereby maintain the skirt element and attached planar element in their installed positions.

4,607,501

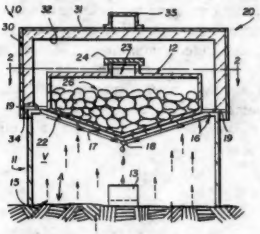
CONDENSING AND COLLECTING VAPORS EMANATING FROM A LAND SURFACE

Kenneth E. Vanlier, 2195 Greenskeeper Ct., Reston, Va. 22091

Filed Oct. 19, 1984, Ser. No. 662,552

Int. Cl.[4] F25D *21/14*

U.S. Cl. 62—288 **12 Claims**



1. Apparatus for condensing and collecting vapors emanating from a land surface, comprising:

means for enclosing a volume of air above an area of a land surface, said means including a top member;

means for positively cooling said top member so that vapors emanating from the area of land surface enclosed will condense on said top member; and

means for collecting condensate which is formed on said top member;

wherein said enclosing means top member has an inverted conical shape, and a downwardmost point comprising the apex of said inverted cone; and wherein said positive cooling means has a bottom member having a conical shape corresponding to, and interfitting with, said enclosing means top member inverted conical shape; and wherein said collecting means is in operative association with said apex.

4,607,502

DEVICE FOR COOLING CONTAINERS, FOR INSTANCE BEVERAGE BOTTLES OR BEVERAGE CANS, ARRANGED IN A WRAPPING

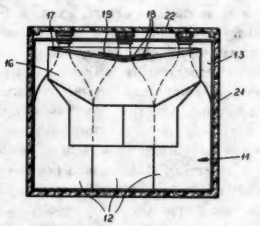
Zeljko Tomac, Moritzstr. 3, 6200 Wiesbaden, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,558

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320243

Int. Cl.[4] F25D *3/10*

U.S. Cl. 62—294 **11 Claims**



1. A self-cooling package assembly for a multiplicity of beverage containers, comprising:

a multiplicity of beverage containers arranged in an array;

a wrapping at least partly enclosing said containers and extending around said array to retain said containers together in said array; and

a tightly closable cooling medium receptacle received in said wrapping, said receptacle including:

thermally conductive walls defining an interior compartment of said receptacle and in contact with said containers for cooling same upon the generation of a refrigerating reaction in said compartment,

means forming an inlet communicating with said compartment for adding a reactive component thereto adapted to react to form a refrigerating mixture in said compartment,

a durable storage-stable reactive component retained in said compartment under noncooling conditions and adapted to react with said reactive component added through said inlet to generate a cooling mixture abstracting heat from said containers through said walls, and

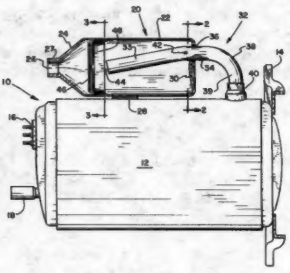
means for closing said inlet to retain said mixture in said compartment.

4,607,503

COMPRESSOR MOUNTED SUCTION ACCUMULATOR

Emanuel D. Fry, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Sep. 27, 1985, Ser. No. 781,103
Int. Cl.[4] F25B *43/00*
U.S. Cl. 62—503 **13 Claims**



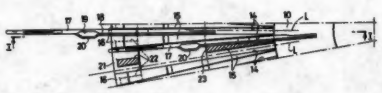
1. In combination, a hermetic compressor having a housing, an accumulator mounted on said housing in closely spaced relationship thereto, said accumulator having a cylindrical casing, a first end wall including an inlet aperture, and a second end wall including an outlet aperture, a screen disposed inside said accumulator casing, said second end wall having a greater wall thickness than said accumulator casing, said outlet aperture being located eccentrically with respect to the center of said second end wall and spaced outwardly of said center with respect to said housing, a suction tube having one end portion extending through said outlet aperture into said accumulator casing and disposed at substantially right angles to said second end wall, the open end of said one end portion disposed substantially coaxially with said accumulator casing, a second end portion of said tube disposed at substantially 90° with respect to said first end portion and extending into said compressor housing, said tube having a diameter in the range of ¼ inches to ⅜ inches and said accumulator casing having a diameter in the range of 2 inches to 2½ inches.

4,607,504

NEEDLE DIAL FOR A SINGLE-CYLINDER CIRCULAR HOSIERY KNITTING MACHINE FOR PRODUCING RIBBED KNITTING

Armando Vincoli, Brescia, Italy, assignor to Santoni & C. S.p.A., Brescia, Italy

Filed May 17, 1984, Ser. No. 611,092
Claims priority, application Italy, May 31, 1983, 22001/83[U]
Int. Cl.[4] D04B *9/22, 15/18*
U.S. Cl. 66—24 **8 Claims**



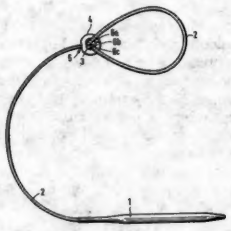
1. A needle dial for single-cylinder circular hosiery knitting machines for producing ribbed knitting comprising a disc having a plurality of radially extending angularly equidistantly spaced dividing walls, each adjacent pair of dividing walls setting-off therebetween a radially extending groove, each groove being defined by a top wall of said disc and one wall each of adjacent pairs of said dividing walls, said one walls having upper wall portions in generally spaced parallel relationship to each other and to a longitudinal axis of the groove defined therebetween, a lower radially outermost wall portion of one of said one walls being circumferentially offset from a radially innermost wall portion thereof and from its associated longitudinal axis thereby forming a recess adapted to receive therein a distal arch of an associated composite needle, an annular downwardly opening cavity in each dividing wall medially of radially opposite ends thereof, each recess being in radial communication with said annular cavity, a lower element removably secured to said disc, said lower element having an annular band bridging each cavity, and said annular band having an upper surface generally coplanar with said grooves bottom walls.

4,607,505

HAND NEEDLE FOR KNITTING OR CROCHET

Friedrich W. Dünker, Altena, and Walter Ossenberg-Engels, Iserlohn, both of Fed. Rep. of Germany, assignors to Joh. Moritz Rump, Altena, Fed. Rep. of Germany

Filed Nov. 1, 1985, Ser. No. 794,239
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1984, 3441400
Int. Cl.[4] D04B *35/02*
U.S. Cl. 66—117 **7 Claims**

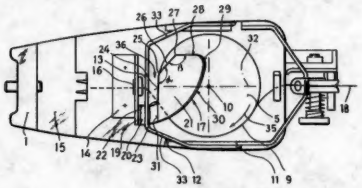


1. A hand needle for knitting or crochet, comprising a bending-resistant needle tip; a flexible loop-receiving rod connected to said needle tip; and a loop brake displaceably positioned on said rod and securable thereon against slipping off a free end of said rod, said loop brake having a through opening for receiving said rod therethrough, said through opening being a radial opening, said loop brake further including at least one recess radially extended therein for receiving the end of said rod.

4,607,506
YARN FEEDING DEVICE

Kurt A. G. Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Sep. 26, 1984, Ser. No. 655,203
Claims priority, application Sweden, Sep. 27, 1983, 8305194; Fed. Rep. of Germany, Jun. 13, 1984, 3421941
Int. Cl.[4] D04B *15/48*
U.S. Cl. 66—125 R 8 Claims



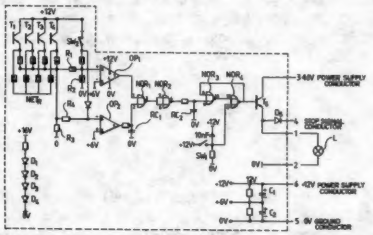
1. A yarn feeding device, particularly for the positive feeding of a yarn to a knitting machine, comprising a rotatably drivable storage drum adapted to have a yarn supply wound onto its periphery and to have the yarn withdrawn therefrom over a rim of said storage drum at a withdrawal speed corresponding to the winding speed, a stationary yarn guide element located below the plane of said rim and outwards of the periphery of said rim in a center plane extending substantially through the axis of rotation of said storage drum, a yarn guiding element having a yarn guiding edge located in the path followed by the yarn during a correct positive yarn feeding operation between said rim and said yarn guide element, and a stoppage sensing element having a transverse portion supported on said yarn and extending across the yarn's path substantially parallel to a tangent of said rim between said yarn guiding edge and said yarn guide element, said stoppage sensing element being pivotally mounted and biased by a biasing force in a direction biasing said yarn into engagement with said yarn guiding edge, the improvement wherein said yarn guiding edge extends substantially rectilinear and parallel to said transverse portion, said yarn passing above said yarn guiding edge and under said transverse portion so that the biasing force acting on said stoppage sensing element holds the yarn in engagement with the yarn guiding edge, one end of said yarn guiding edge extending beyond said center plane and being adjoined to a yarn support edge which is located rearwards of said center plane as seen in the direction of rotation of said storage drum and which gradually recedes—as seen from said yarn guide element—so as to extend in a direction away from said transverse portion.

4,607,507
YARN-FEEDING APPARATUS FOR A CIRCULAR KNITTING MACHINE

Kurt A. G. Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

PCT No. PCT/EP83/00131, § 371 Date Jan. 25, 1984, § 102(e) Date Jan. 25, 1984, PCT Pub. No. WO83/04273, PCT Pub. Date Dec. 8, 1983
Continuation of Ser. No. 584,436, Jan. 25, 1984, abandoned. This PCT application May 24, 1983, Ser. No. 815,300
Claims priority, application Sweden, May 25, 1982, 8203216; Aug. 13, 1982, 8204685; Oct. 4, 1982, 8205657
Int. Cl.[4] D04B *15/43, 35/16*
U.S. Cl. 66—132 T 14 Claims

1. In a yarn-feeding apparatus for positive feeding of plural yarns to a circular mechanism of a circular knitting machine, in particular a multi-system circular knitting machine, including fingers which are arranged movable in the circular mechanism for selectively and successively receiving and guiding the yarn into a knitting position or for taking the yarn out of a knitting position, a plurality of yarn delivery devices which in number correspond with the number of yarns, each said yarn delivery device having a yarn-transporting element and a yarn-guiding element which can be moved back and forth in response to yarn tension between a feeding position in which the yarn is in driving engagement with the yarn-transporting element and a nonfeeding position in which the yarn is free of driving engagement with the yarn-transporting element, and an electric position sensor means associated with each yarn-guiding element for producing a signal in dependence on the position of the yarn-guiding element, comprising the improvement wherein each said position sensor means provides a first signal when the yarn-guiding element is in the feeding position and provides a second signal when the yarn-guiding element is in the nonfeeding position, the first and second signals being different from one another, and an electric logic switching

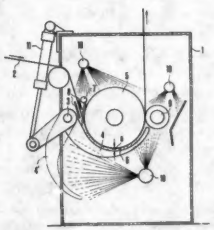


circuit for turning off the knitting machine, said switching circuit being connected for receiving the signals from all of the position sensor means, said switching circuit including a fault condition sensing means for receiving and evaluating the combination of signals as received from all of said position sensor means for sensing a first fault condition caused by a yarn breakage or misfeed and a second fault condition caused by a yarn changing fault such that two yarns are being fed simultaneously, said fault condition sensing means including means for receiving and evaluating first and second said combinations of signals which are distinctively different from one another and respectively indicate said first and second fault conditions, and said switching circuit having switch means for shutting off the knitting machine upon sensing any one of said faults.

4,607,508
APPARATUS FOR APPLYING TREATING SOLUTION TO A CLOTH IN CONTINUOUS TREATMENT OF THE CLOTH

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works, Ltd., Japan

Filed Oct. 12, 1984, Ser. No. 660,842
Claims priority, application Japan, Oct. 18, 1983, 58-194758; Nov. 14, 1983, 58-213696
Int. Cl.[4] B05C *3/132*
U.S. Cl. 68—22 R 6 Claims



1. An apparatus for applying a treating solution to a cloth in the continuous treatment thereof, comprising:

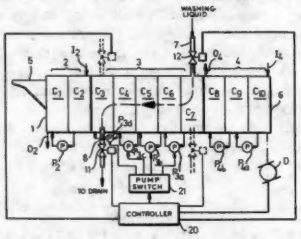
(a) a cloth guide drum for transporting and guiding a cloth to be treated;
(b) a movable treating solution tank provided in close proximity to the circumference of the lower half of the cloth guide drum thus forming a cloth passage of a narrow width therebetween;
(c) a cylinder for raising and lowering of the movable treating solution tank;
(d) a treating solution supply pipe for supplying a treating solution continuously to the cloth passage;
(e) a cloth guide roller provided in the cloth passage of a narrow-width, said guide roller located for partially releasing the contact between the cloth and the guide drum; and
(f) wash-water jet nozzles for propelling wash water to at least the inner surface of said movable treating solution tank, the surface of said cloth guide drum, and the surface of said cloth guide roller.

4,607,509

COUNTERFLOW CYCLING WASHING MACHINE

Karl-Heinz Stoll, Wiesbaden, Fed. Rep. of Germany, assignor to Senkingwerk GmbH, Hildesheim, Fed. Rep. of Germany

Filed Nov. 16, 1984, Ser. No. 672,582
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341504
Int. Cl.[4] D06F *31/00*
U.S. Cl. 68—27 1 Claim



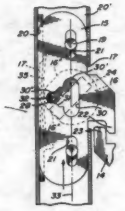
1. A counterflow cycling washing machine, comprising:
a washing trommel axially divided into a plurality of washing zones, each divided into a plurality of washing chambers traversed in one direction by batches of wash in succession;
respective wash fluid pumps connecting a downstream one of said chambers to an upstream one of said chambers with respect to said direction for each of said zones for effecting counterflow of wash liquid in a direction opposite said one direction;
an inlet communicating with an upstream end of one of said zones with respect to said one direction;
a first outlet communicating with a downstream end of said one of said zones with respect to said one direction;
a second outlet communicating with said upstream end of said one of said zones;
respective valves connected to said inlet and to said outlets so that said second outlet is effective during counterflow and the valves of said inlet and said first outlet are open during a concurrent flow of said fluid in said one direction; and
pump control means for switching off said counterflow pumps of said one of said zones when concurrent flow begins.

4,607,510

LOCK MECHANISM FOR CLOSURE MEMBERS

Gad Shanaan; Jack Jospé; Joe Jospé, all of Montreal, and Carlo Caputo, La Salle, all of Canada, assignors to Ideal Security Inc., Quebec, Canada

Filed Oct. 3, 1984, Ser. No. 657,257
Int. Cl.[4] E05B *65/08*
U.S. Cl. 70—95 13 Claims



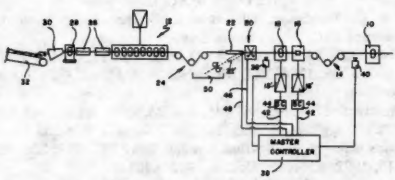
1. A lock mechanism for a closure member, said mechanism comprising a housing for securement to one side of said closure member, a locking slide member slidingly guided in said housing, said slide member having a locking element to engage and disengage with a keeper member secured to a further member adjacent said closure member, a slide activating rotating knob rotatably retained in said housing for limited rotating displacement therein, a slide displacing pin secured to said rotating knob and offset from a central axis thereof, said slide member having a pin receiving slot coacting with said pin whereby limited rotation of said knob causes displacement of said pin to frictionally engage said slide in said slot to cause limited sliding displacement of said slide between a locked and unlocked position, and arresting means to prevent movement of said slide by applying a force thereto when the slide is in its locked position, said arresting means being constituted by an abutment wall formed in an edge of said slot and an abutment face formed in said pin, said abutment wall and said abutment face being in flush contact with one another when said slide is located in said locked position with the central transverse long axis of said abutment face of said pin being aligned with said central axis of said rotating knob.

4,607,511

TENSION PREFINISHING WITH SIZING STANDS

Terence M. Shore, Northwich, England, assignor to Morgan Construction Company, Worcester, Mass.

Filed Apr. 26, 1985, Ser. No. 727,676
Int. Cl.[4] B21B *37/02*
U.S. Cl. 72—16 7 Claims



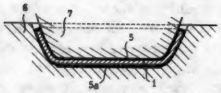
1. A method of controlling the gauge of a product, such as for example a rod or bar, as the product is passing from an upstream roll stand to a finishing block, said method comprising: rolling the product under tension between successive first and second sizing stands arranged between said upstream roll stand and said finishing block; introducing variable loops in the product between said upstream roll stand and said first sizing stand, and between said second sizing stand and said finishing block; taking cross sectional dimensional measurements of the

product emerging from said second sizing stand; and when said measurements indicate an off gauge condition in the product emerging from said second sizing stand, adjusting the rolling speeds of at least one of said sizing stands in order to correct the off gauge condition by varying the tension in the product passing therebetween.

4,607,512
PROCESS FOR MANUFACTURING A COOKERY VESSEL

Jean-Pierre Deville, Poisy, France, assignor to SEB S.A., Selongey, France

Filed Jul. 16, 1985, Ser. No. 755,716
Claims priority, application France, Jul. 20, 1984, 84 11516
Int. Cl.⁴ B21D *22/00, 53/00*
U.S. Cl. 72—46 **3 Claims**



1. Process for manufacturing a cookery vessel comprising a flat bottom and a side wall, the interior of the vessel and an outer face (8) of the side wall being coated with a fluorinated polymer (5), the flat bottom being coated with an enamel coating (2), comprising the following stages:

(a) applying a coating of enamel (2) to a central part of a metal disc (1), corresponding to an outer face of a bottom section of the vessel to be formed;

(b) baking said enamel coating (2);

(c) applying a continuous coating of fluorinated polymer to first and second faces (3, 4) of the disc (1) so that the enamel-coated part (2) is also covered by said coating of fluorinated polymer;

(e) baking said coating of fluorinated polymer;

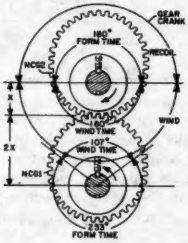
(e) deep-drawing the disc (1) to the shape desired for the vessel and

(f) removing the coating of fluorinated polymer from the enamel-coated part (2).

4,607,513
WIRE WORKING MACHINE

Frank S. Russell, Northboro, Mass., assignor to Sleeper & Hartley Corp., Worcester, Mass.

Filed Nov. 1, 1984, Ser. No. 667,219
Int. Cl.⁴ B21F *35/02*
U.S. Cl. 72—137 **27 Claims**



1. A wire working machine comprising:

a machine frame,

feed means supported from the frame and for selectively feeding wire to a work station of the machine,

cam shaft means supported from the frame,

a drive source for driving said cam shaft means,

wire forming means including means operable at said work station in response to said cam shaft means and over a predetermined forming period,

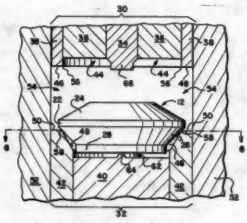
wire winding means including means operable at said work station in response to said cam shaft means and over a predetermined winding period,

and non-circular gear means intercoupling the cam shaft means and wire winding means configured to provide, during a full cam shaft means rotation, different intervals of the predetermined forming and winding periods, respectively.

4,607,514
METHOD OF FORMING A METAL PART HAVING AN ANNULAR FLANGE

Russell A. Nippert, Columbus, Ohio, assignor to The Nippert Company, Delaware, Ohio

Filed May 7, 1984, Ser. No. 607,856
Int. Cl.⁴ B21D *22/00*
U.S. Cl. 72—354 **4 Claims**



1. A method of forming a metal part having an annular flange, comprising the steps of:

providing a metal billet having an upper, frusto-conical portion, increasing in diameter downward, and a lower, frusto-conical portion directly beneath said upper frusto-conical portion, increasing in diameter upward,

providing upper and lower die elements for relative movement axially toward and away from one another, said upper die element defining a first cavity and a first outer shoulder extending circumferentially therearound, said first outer shoulder having an inner diameter less than the maximum diameter and greater than the minimum diameter of said frusto-conical portions of said upper and lower portions of said billet and having an outer diameter greater than the maximum diameter of said upper and lower portions of said billet, said lower die element defining a second cavity and a second outer shoulder extending circumferentially therearound, said second outer shoulder having inner and outer diameters substantially equal to the inner and outer diameters, respectively, of said first outer shoulder,

providing a sleeve for receiving said upper and lower die elements, said sleeve having an inner diameter substantially equal to said outer diameter of said first and second outer shoulders, said upper and lower die elements being positioned in said sleeve with said first and second outer shoulders in direct opposition whereby said first and second outer shoulders and said sleeve define an annular space,

placing said billet in said sleeve between said upper and lower die elements such that the parts of said upper and lower portions of greatest diameter extend into said annular space, the edge between said first outer shoulder and said first cavity contacting said upper frusto-conical portion along a line extending circumferentially therearound,

and the edge between said second outer shoulder and said second cavity contacting said lower frusto-conical portion along a line extending circumferentially therearound, and causing relative movement of said upper and lower die elements toward each other, whereby the part of said metal billet extending into said annular space is extruded radially outward to form said flange.

4,607,515

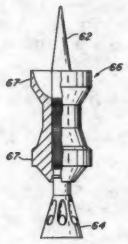
KINETIC ENERGY PENETRATOR

Glenn B. Goodfellow, Franklin Lake, N.J., assignor to UTI Corporation, Collegeville, Pa.

Continuation-in-part of Ser. No. 451,136, Dec. 20, 1982, Pat. No. 4,462,238. This application Dec. 16, 1983, Ser. No. 562,305

Int. Cl.⁴ B21D *22/00*

U.S. Cl. 72—358 **12 Claims**



1. A kinetic energy penetrator comprising a body having a length at least five times as large as its diameter, said penetrator being cold worked so as to have a strength along its length in a predetermined manner attained by the following method:

(a) producing a metal specimen with a pre-shape and dimension determined on the basis of the desired strength and mechanical properties,

(b) introducing said preshaped specimen into a confined chamber which defines the desired peripheral final shape, spacing at least a portion of the periphery of said preshaped specimen from at least a portion of the walls defining said chamber with the relative dimensions of the spacing being governed by the amount of cold work needed to achieve desired strength or mechanical properties in that portion of the specimen,

(c) engaging one face of said specimen with at least one moveable wall of said chamber and applying a continuous compressive force by said wall with a sufficient magnitude to force the preshaped specimen to deform and fill the chamber at the end of the compressive stroke, and

(d) applying said compressive force by moving said moveable wall of the chamber so that the yield strength of the specimen progressively increases, and progressively increasing the magnitude of said force as the yield strength increases until the entire circumference of the specimen contacts the walls.

4,607,516

TRANSFER FEED PRESS WITH IMPROVED TRANSFER FEED SYSTEM

Thomas B. Schafer, Riverside, Ill.; William Sindelar, deceased, late of Darien, Ill. (by Dorothy Sindelar, legal representative), and Joseph R. Cummens, Elmhurst, Ill., assignors to Danly Machine Corporation, Chicago, Ill.

Filed Sep. 3, 1982, Ser. No. 414,674

Int. Cl.⁴ B21J *13/08*

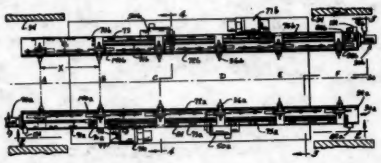
U.S. Cl. 72—405 **5 Claims**

1. In a transfer feed press for performing a series of press operations on a workpiece at a series of work stations, a transfer feed system comprising the combination of

a plurality of finger units spaced along said work stations for gripping said workpieces and moving the same between successive work stations in the press,

means mounting said finger units for independently controllable movement along a plurality of axes including a vertical axis defining the direction of vertical movement of said finger units for raising and lowering the workpieces at the various work stations of the press, a substantial portion of said transfer feed system being raised and lowered along with said finger units,

a separate electric servomotor for controlling movement of



said finger units along each of said axes, each of said servomotors being independently controllable by electrical control signals, and

fluid operable counterbalancing means for applying an upward force to said transfer feed system, said counterbalancing means operating independently of said means for moving said finger units along said vertical axis, said upward force being substantially equal to the weight of said feed system so that said servomotor for controlling movement of said finger units slong said vertical axis is not required to overcome the weight of said feed system.

4,607,517

STAMPING AND BENDING TOOL ASSEMBLY

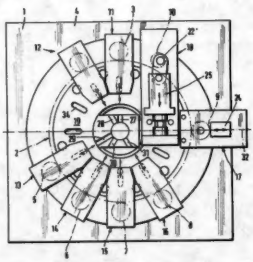
Heinz Finzer, and Wolfgang Kessler, both of Bad Säckingen, Fed. Rep. of Germany, assignors to Heinz Finzer KG, Bad Säckingen, Fed. Rep. of Germany

Filed Mar. 16, 1984, Ser. No. 590,335

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312671

Int. Cl.⁴ B21J *9/18*

U.S. Cl. 72—449 **46 Claims**



1. A stamping and bending tool assembly for automatically manufacturing bent parts comprising:

a housing frame supporting a plurality of carriage means, the carriage means being disposed around a circular tool carrier table means having a central work station and a bending tool, each carriage means controlled by respective cam means engaging respective pinion means, the respective pinion means engaging a common central drive gear means;

the table means comprising a quick replacement plate having centering and securing means for establishing a fixed mutual angular relationship of the respective pinion means

and against movement when the replacement plate is removed to selectively change the bending tool.

4,607,518

FORGING PRESS OF UNDERFLOOR DESIGN

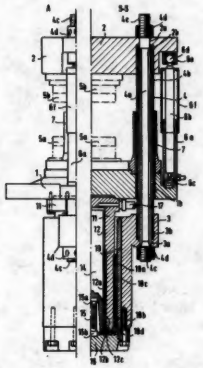
Hans A. Schubert, Düsseldorf, and Klaus Schulze, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to SMS HasenClever Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 19, 1985, Ser. No. 746,323

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1984, 3422644

Int. Cl.[4] B21J *9/12*

U.S. Cl. 72—453.12 **11 Claims**



1. A forging press of underfloor design comprising a static platen, a travelling frame formed by an upper travelling crosshead, a lower travelling crosshead and columns inter-connecting the said travelling crossheads, a guide shaft connected to the platen and acting as a guide for the lower travelling crosshead, at least one working piston-cylinder unit acting between the platten and the lower travelling crosshead for exerting forging pressure, and retraction piston-cylinder units acting between the platten and the upper travelling crosshead for retracting the travelling frame, characterised in that the guide shaft is made hollow and serves as the cylinder for the working piston of the said working piston-cylinder unit, the lower travelling crosshead is guided on the said hollow guide shaft, and the working piston is guided in the cylinder cavity of the said hollow guide shaft and is supported on the lower travelling crosshead by means of a thrust rod interposed between ball-and-socket joints.

4,607,519

VEHICLE WHEEL ALIGNMENT DEVICE

Stephen R. Kinion, 404 Burlington Dr., Colorado Springs, Colo. 80906

Filed May 29, 1984, Ser. No. 614,525

Int. Cl.[4] B21D *1/12*

U.S. Cl. 72—457 **7 Claims**

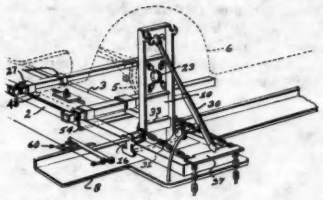
1. A vehicle wheel alignment device comprising in combination:

a rigid frame having a pair of mutually parallel track forming members which frame is arranged to be disposed parallel to the axle of a vehicle wheel;

an upstanding wheel plate having apertures for receiving the lug nuts of a wheel and having bi-laterally projecting spindles attached to the lower portion thereof;

journal means carried by each of said tracks and movable therealong, rotatably mounting the respective spindle projections of the wheel plate; and

power means bearing against the wheel plate to interchangeably pivot the plate about the axis formed by the projecting spindles and about the vertical longitudinal axis of the plate.



4,607,520

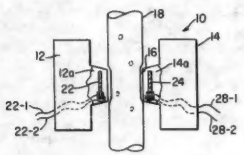
METHOD AND APPARATUS FOR DETECTING DISCONTINUITIES IN A FLUID STREAM

Naim Dam, Oakland Gardens, N.Y., assignor to Introtek Corporation, Deer Park, N.Y.

Filed Jan. 9, 1984, Ser. No. 569,389

Int. Cl.[4] G01N *29/02*

U.S. Cl. 73—19 **15 Claims**



1. Apparatus for detecting a discontinuity in a stream of a first fluid flowing in a tube comprising

a sensing means having spaced apart transmitting and receiving transducers, the space accommodating the tube,

means for supplying successive bursts of pulses of electrical energy to said transmitting transducer to cause it to vibrate to produce corresponding bursts of pulses of sonic energy which are transmitted through said tube to said receiving transducer, there being a predetermined time of no pulse production between successive burst of pulses, said receiving transducer converting the bursts of pulses of received sonic energy into corresponding electrical signals during said predetermined time between said successive bursts,

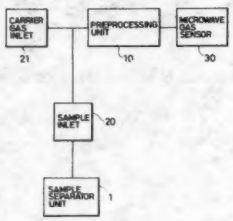
and circuit means responsive to said electrical signals produced by said receiving transducer during said predetermined time for producing first signals corresponding to the pulses of the transmitted pulses of a burst in response to the presence of said first fluid and a second signal in response to the presence of a discontinuity in said first fluid,

and means responsive to receipt of a respective predetermined number of said first or said second signals to produce an output corresponding to the presence of liquid or a discontinuity in said tube.

4,607,521
METHOD OF IMPROVING RESPONSE CHARACTERISTICS OF GAS SENSOR USING MICROWAVE SPECTROMETER

Tomoo Saito; Mitsutoshi Tanimoto; Masayoshi Yasuda, all of Kanagawa; Yasuharu Ijuin, Tokyo; Akio Hikita, Kanagawa; Naotake Morikawa, Tokyo; Hiromichi Uehara, Saitama, and Masaru Fukuyama, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Nov. 20, 1984, Ser. No. 673,456
Int. Cl.[4] G01N *22/00*
U.S. Cl. 73—23 **4 Claims**

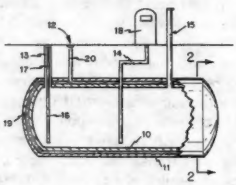


1. A method of sensing concentrations of a gas sample with a gas sensor using a microwave spectrometer, wherein the improvement comprises continuously supplying to a gas flowing through said gas sensor as a sample to be sensed a first compound having an identical or similar chemical form to that of the sample at a rate at least larger than that at which an adsorption equilibrium condition is established in the gas sensor so that a sample concentration in the gas sensor is maintained at least at a level at which adsorption is saturated.

4,607,522
STORAGE TANKS HAVING SECONDARY CONTAINMENT MEANS

Bruce R. Sharp, 4090 Rose Hill Ave., Cincinnati, Ohio 45229

Continuation-in-part of Ser. No. 544,013, Oct. 21, 1983, Pat. No. 4,523,454, and a continuation-in-part of Ser. No. 580,800, Feb. 16, 1984, Pat. No. 4,524,609, which is a continuation-in-part of Ser. No. 544,012, Oct. 21, 1983, abandoned. This application Jun. 3, 1985, Ser. No. 740,869
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] G01M *3/32*
U.S. Cl. 73—49.2 **11 Claims**



1. A storage tank system for liquids having secondary containment capability and leakage detection capability, comprising:

(a) a rigid inner tank for storing the liquid, having fill pipe and dispensing line;

(b) a flexible jacket encasing the inner tank so as to form a closed space between the tank and the jacket;

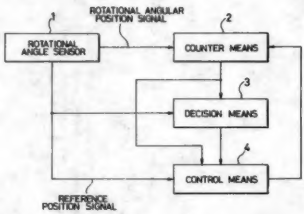
(c) a gas pervious material positioned between the rigid inner tank and the flexible jacket, said material capable of allowing any leaked liquid from the storage tank or water outside the flexible jacket to pass through it; and

(d) detecting means associated with the closed space occupied by the gas pervious material for detecting leakage into or from either of said tank and jacket.

4,607,523
CRANK ANGLE DETECTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Minoru Takahashi; Teruo Fukuda, both of Kobe; Toshiaki Isobe, Nagoya, and Mamoru Kobashi, Aichi, all of Japan, assignors to Fujitsu Ten Limited, Kobe and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 17, 1985, Ser. No. 776,864
Claims priority, application Japan, Sep. 20, 1984, 59-197289; Dec. 29, 1984, 59-279922
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 **3 Claims**



1. A crank angle detecting apparatus for an internal combustion engine, comprising:

a crank angle sensor for generating a reference position signal at a reference position in each rotation of the internal combustion engine and a crank angle signal upon each rotation of the internal combustion engine through a fixed angle;

counter means for counting the crank angle signals generated by said crank angle sensor and, when its count value has reached a first set value, going to a second set value upon application of the next crank angle signal;

decision means for deciding whether the count value of said counter means changed from the first to the second set value prior to the generation of the reference position signal; and

control means for controlling said counter means so that when it is decided by said decision means that the count value of said counter means did not change from the first set value to the second set value prior to the generation of the reference position signal, said counter means is made to have the second set value under the conditions that said counter means is at the first set value and the reference position signal has been generated, said control means controlling said counter means so that when it is decided by said decision means that the count value of said counter means has changed from the first to the second set value prior to the generation of the reference position signal, said counter means is made to have the second set value at the time of generation of the reference position signal.

4,607,524
METHOD FOR OBTAINING A DIMENSIONLESS REPRESENTATION OF WELL PRESSURE DATA WITHOUT THE USE OF TYPE-CURVES

Alain C. Gringarten, Englewood, Colo., assignor to Scientific Software-Intercomp, Inc., Denver, Colo.

Filed Apr. 9, 1985, Ser. No. 721,197
Int. Cl.[4] E21B *49/00*
U.S. Cl. 73—152 **14 Claims**

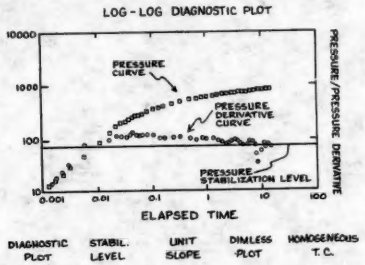
1. In a process for finding underground formation characteristics, a method for determing pressure match and time match without the use of type-curves, comprising:

displaying a first graph that relates pressure and time;

displaying a second graph relating to the drivative of a pressure function;

selecting a pressure stabilization level using said second graph;

using the pressure stabilization level and a corresponding magnitude of a dimensionless function of pressure to determine pressure match;



obtaining a time magnitude depending upon the pressure stabilization level and a slope associated with a portion of at least one of said first and second graphs; and

using said time magnitude and a corresponding magnitude of a dimensionless function of time to determine time match.

4,607,525

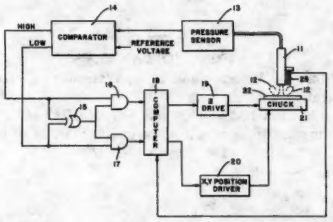
HEIGHT MEASURING SYSTEM

Michael D. Turner, San Jose, and Jacques Roch, Mountain View, both of Calif., assignors to General Signal Corporation, Stamford, Conn.

Filed Oct. 9, 1984, Ser. No. 659,210

Int. Cl.[4] G01B *13/16*; G01R *31/02*

U.S. Cl. 73—37.5 **11 Claims**



1. A system for determining the height of specific points on a wafer, and the approximate location of a plurality of dies, that comprise said wafer said system comprising:

(a) a chuck for holding a wafer containing a plurality of dies of various positions;

(b) a probe that senses differences in air pressure between specific points on the wafer and said probe;

(c) a comparator coupled to the output of said probe for comparing the height sensed by said probe to a reference level stored in said comparing means and determining whether or not said probe is at, above, or below said reference level;

(d) a computer coupled to the output of said comparator for determining the relative orientation of said probe and location of said dies; and

(e) means whose input is coupled to the output of said computer and whose output is coupled to the input of said chuck for moving said chuck to specified X, Y, Z locations so that said probe may sense different points on said wafer, and said computer will determine a mathematical approximation of the surface configuration of said wafer wherein the location of incomplete dies and/or one or more edges of said wafer may be determined by over driving said probe as said wafer is moved relative to said probe so that the edges of said wafer will be determined the moment said comparator indicates that said probe is below the reference level and said computer determines if there is a complete or incomplete die at that edge location.

4,607,526

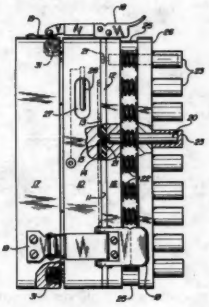
PARTICLE ANALYSIS SYSTEM

Bernard O. Bachenheimer, Fairfield; Frank J. Antoci, Milford; Edward L. Carver, Jr., Naugatuck; Ernest N. Pellegrino, Bridgeport, and Richard C. Seltenreich, Shelton, all of Conn., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 21, 1984, Ser. No. 684,833

Int. Cl.[4] G01N *15/10, 15/12*

U.S. Cl. 73—432 PS **7 Claims**



1. A system for particle analysis comprising:

(a) a face plate member that has a substantially rigid surface,

(b) a flexible sheet member that has a surface at least a part of which is adapted for mating engagement with a corresponding part of the face plate surface,

(c) a plurality of passages in at least one of the members,

(d) a plurality of valve lands, each of which separates at least two adjacent passages in a member, the lands having surfaces adapted for releasably mating with corresponding parts of the surface of the other member,

(e) a plurality of valve actuators, each associated with a valve land and adapted to flex the sheet member between a first position, in which the valve land of one member sealingly mates with the corresponding part of the surface of the other member, and a second position, in which the sheet member is spaced away from the first position to allow flow across the land associated therewith and between the adjacent passages that are separated therby when said sheet member is in said first position,

(f) in the face plate member, at least one analysis chamber in fluid communication with at least one passage,

(g) analysis means connected in sensing relation to each analysis chamber and adapted for analyzing particles in a fluid,

(h) pump means for pumping fluid through the system, and

(i) means for controlling the sequential operation of the valve actuators and pump means.

4,607,527

METHOD AND APPARATUS FOR SENSING ROTATION OF A DIAL ARM OF A UTILITY METER

Lawrence M. Sears, 3263 Glencairn Rd., Shaker Heights, Ohio 44122

Filed Dec. 19, 1983, Ser. No. 562,423

Int. Cl.[4] G01F *15/14*

U.S. Cl. 73—432 A **15 Claims**

1. Apparatus for detecting revolutions of a dial arm of a

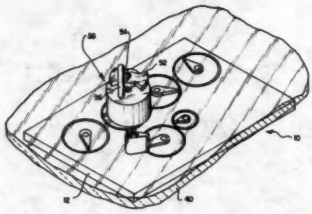
utility meter, said dial arm being located on a dial face of said meter and covered by a transparent face plate, said apparatus comprising:

a base affixable over a hole in said transparent face plate at a location close to but offset transversely from said dial arm,

a rotatable shaft having an axis of rotation and extending through said base, for rotation about said axis, and said hole in a direction substantially normal to said face plate,

a shoe joined to, and rotatable with, the portion of said shaft which extends beyond said base towards said dial face, said shoe being radially elongated,

resilient means for rotationally biasing said shaft in a first direction about said axis towards a first angular position relative to said base wherein said shoe projects into the path of rotation of said dial arm, whereby, as said dial arm rotates, it abuts said shoe, forces it to rotate in a second direction opposite to said first direction about said axis to a second angular position relative to said base, and then releases it, enabling the shoe to then return to said first



angular position under the resilient urging of said resilient means,

first switch means joined to, and rotatable with, the portion of said shaft which extends beyond said base and away from said dial face, said first switch means being rotated in said second direction from a third to a fourth angular position, respectively corresponding to said first and second angular positions, relative to said base by said shaft as said shoe is rotated from said first to said second angular position, and

second switch means attached to said base adjacent said first switch means such that as said first switch means rotates between said third and fourth angular positions it also moves relative to said second switch means,

one of said first and second switch means is a magnet and the other is a reed switch, said reed switch having switch open and switch closed states and changing between said open and closed states as said first switch means moves relative to said second switch means, due to changing proximity with said magnet.

4,607,528

METHOD OF DETERMINING A CLEAN PROPELLER PRESSURE SIGNAL FROM A PROPELLER/ENGINE EXHAUST COMBINED SIGNAL MEASURED IN FLIGHT WITH A MICROPHONE ARRANGED ON A PROPELLER-DRIVEN AIRCRAFT

Michael Kallergis, Braunschweig, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,055

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409487

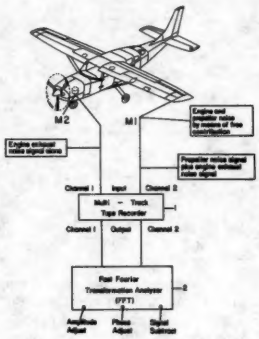
Int. Cl.[4] G01N *29/00*

U.S. Cl. 73—602 **7 Claims**

1. A method of determining the propeller pressure signal of a propeller-driven aircraft powered by a four-stroke internal combustion engine comprising:

a. recording a combined propeller and exhaust signal from said aircraft during the flight of said aircraft, said combined signal consisting of a series of successive propeller signals and a series of successive combustion signals from individual cylinders of said engine;

b. simultaneously recording an exhaust signal from said aircraft, said exhaust signal consisting of a series of successive combustion signals from individual cylinders of said engine and being measured adjacent the exhaust pipe of said engine;



c. adjusting the amplitude of at least one of said combined signal and said exhaust signal so that the amplitude of said exhaust signal is substantially the same as the amplitude of the exhaust signal portion of said combined signal;

d. adjusting the phase of at least one of said combined signal and said exhaust signal so that said combined and exhaust signals are in phase with each other; and

e. thereafter subtracting said exhaust signal from said combined signal to determine said propeller pressure signal.

4,607,529

VIBRATION ANALYSIS

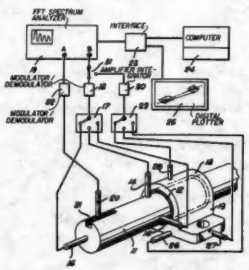
John Morey, 3 Pigeon Bank Lane, Warrandyte, Victoria 3134, Australia

Filed Mar. 18, 1985, Ser. No. 712,445

Claims priority, application Australia, Mar. 21, 1984, PG4171

Int. Cl.[4] G01N *29/00*

U.S. Cl. 73—660 **16 Claims**



1. A method for measuring vibration in a machine including a member under periodic motion, said method comprising the steps of:

(a) selecting specific vibration harmonic components to be measured;

(b) generating by first sensor means a first signal that repeats every period of said motion to provide a reference to a known position on the member, a frequency domain transform of said first signal having known harmonic compo-

nent phase angles relative to said known position for all said selected harmonic components;

(c) generating by second sensor means a second signal which varies in the time domain with respect to a vibration characteristic of the machine;

(d) transforming the second signal into a frequency domain to derive a plurality of third (reconstruction magnitude) signals each indicative of the magnitude of one of the selected harmonic components of the transformed second signal, and synchronously transforming the first signal into the frequency domain to derive a fourth signal for each selected harmonic, each fourth signal being indicative of the phase angle difference between corresponding harmonic components of the transformed second signal and the transformed first signal; and

(e) storing said third signals and said fourth signals.

4,607,530

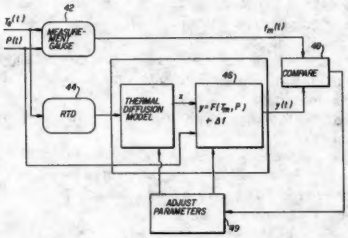
TEMPERATURE COMPENSATION FOR PRESSURE GAUGES

Edward Y. Chow, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,249

Int. Cl.⁴ G01L *19/04*

U.S. Cl. 73—708 **33 Claims**



1. A method for thermal compensation of the pressure determination of a pressure gauge, comprising:

(a) measuring the pressure of the surroundings of which a pressure determination is desired with said pressure gauge;

(b) measuring the temperature of the immediate environment of a resonator of said pressure gauge;

(c) inputting said temperature measurement and said pressure measurement into a dynamic system, wherein said dynamic system comprises a dynamic model of said resonator; and

(d) from said dynamic system, providing a thermally compensated pressure determination.

4,607,531

TORSIONAL-AXIAL EXTENSOMETER WITH ADDITIONAL RESTRAINT TO LIMIT UNNECESSARY MOVEMENTS

Harry R. Meline, Minnetonka, and Richard A. Meyer, Carver, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Jun. 8, 1984, Ser. No. 618,470

Int. Cl.⁴ G01B *5/30*

U.S. Cl. 73—794 **13 Claims**

1. A support assembly for a pair of extensometer sections which measure torsional and axial strains on a specimen having a loading axis, comprising a rigid cross beam of length to span such a specimen;

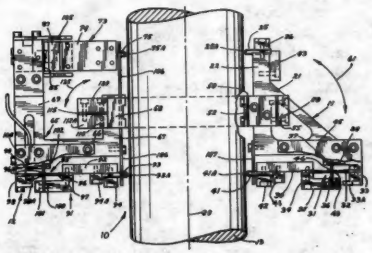
a first flexure assembly at a first end of said cross beam coupled to said cross beam and coupled to a first of said extensometer sections at a position adjacent the end of the first extensometer section closest to such specimen to be tested;

a second flexure assembly coupled to a second end of said cross beam and to a second of said extensometer sections at position adjacent the end of the second extensometer section closest to such specimen to be tested;

said flexure assemblies supporting the two extensometer sections substantially diametrically opposed when installed on such specimen, said extensometer sections each having individual specimen engaging points axially spaced from each other for movement with the surface portions of such specimen in a direction perpendicular to the loading axis;

said first and second flexure assemblies each including a separate pair of flexure beams spaced from each other and the beams of each flexure assembly being substantially coextensive and having their ends coupled to the respective ends of the rigid cross beam and to the first and second extensometer sections, respectively, to rigidly resist pivotal movement of the extensometer sections about a straight line between the points of contact of the respective extensometer section and such specimen;

said first flexure assembly comprising one flexure beam of its



pair having a width dimension substantially perpendicular to the one flexure beam longitudinal axis, said width dimension being substantially parallel to the specimen axis, and the one beam longitudinal axis being substantially perpendicular to the specimen axis, and said first flexure assembly further including another flexure beam of its pair having a width dimension generally perpendicular to its longitudinal length and such width dimension of the other flexure beam being substantially parallel to the specimen axis and spaced from the one beam of the pair, said beams of the first flexure assembly extending from the cross beam laterally to the specimen beyond the location where the first extensometer section contacts the specimen and being coupled to portions of the first extensometer section on an opposite side of said location from the rigid cross beam; and

the flexure beams of said second flexure assembly having width dimensions perpendicular to their respective longitudinal axes, the width dimensions of the flexure beams of said second flexure assembly being substantially perpendicular to each other.

4,607,532

APPARATUS FOR DETERMINING THE BEHAVIOR OF POWDERED MATERIAL UNDER STRESS

Jonathan R. F. Arthur, Sevenoaks, and Trebilcock Dunstan, Rickmansworth, both of England, assignors to University College London, London, England

Filed Apr. 25, 1985, Ser. No. 726,814

Claims priority, application United Kingdom, Apr. 27, 1984, 8410790

Int. Cl.⁴ G01N *3/10*

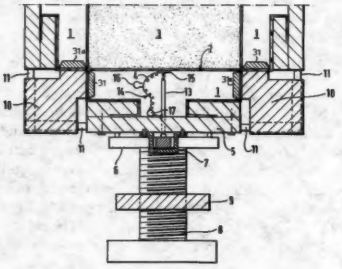
U.S. Cl. 73—819 **6 Claims**

1. An apparatus for determining the behaviour of powder or granular material under stress, comprising:

four flexible boundaries arranged to abut four faces of a cuboid sample of the powder or granular material;

means to apply stress to the sample through the flexible boundaries in two perpendicular directions;

adjusting members arranged at the lateral edges of the said faces and each operatively connected with two adjacent flexible boundaries; and



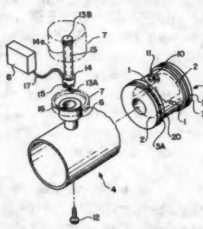
control means to adjust the said adjusting members whereby adjustment of each said member adjusts the two said adjacent flexible boundaries to allow them to strain as the sample strains under the applied stress.

4,607,533

ELECTROMAGNETIC FLOWMETER

Masato Kuroda; Yoshiro Tanaka, and Norikazu Wada, all of Kanagawa, Japan, assignors to Yamatake-Honeywell, Tokyo, Japan

Filed Apr. 17, 1985, Ser. No. 724,371
Int. Cl.[4] G01F *1/58*
U.S. Cl. 73—861.12 **8 Claims**



1. An electromagnetic flowmeter comprising

electrical connector means having a first portion and a second portion separable from said first portion and arranged to mate with said first portion to provide separate electrically conductive paths through said connector means,

a cylindrical inner tube including an electrode, an excitation coil and said first portion of said connector means, said first portion being located on an outer circumferential surface of said tube and electrically connected to said electrode and said coil,

an outer tube housing said inner tube along its axis, and having an access opening extending transversely through said outer tube housing, and

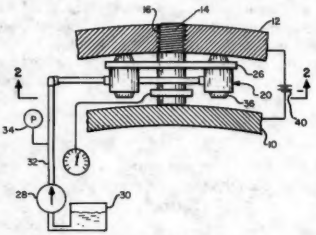
an electrical connector support means externally inserted through said access opening in said outer tube for supporting said second portion of connector means to selectively mate with said first portion of said connector means.

4,607,534

COMPRESSION PIN LOAD TESTER

Adam C. Cerbone, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 28, 1985, Ser. No. 737,839
Int. Cl.[4] G01L *1/02, 5/00*
U.S. Cl. 73—862.01 **2 Claims**



1. A method of determining the compressive loading on a compression support pin, secured to a base and compressively loading a load member, comprising;

placing a hydraulic jack between said base and said load, in parallel and adjacent to said support pin;

passing an electric current from said load to said base through said support pin;

detecting flow of electric current through said support pin;

introducing hydraulic fluid into said hydraulic jack at increasing pressure;

sensing the pressure of fluid present within said hydraulic jack; and

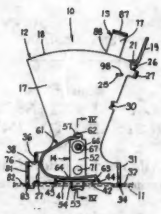
determining the pressure of the hydraulic fluid when the current flow ceases through said support pin, whereby the force required to release load from said pin may be determined.

4,607,535

GAUGE FOR MEASURING THE TENSION IN AN ELONGATE ELEMENT

James A. Okamuro, Kalamazoo, Mich., assignor to Borroughs Tool & Equipment Corporation, Kalamazoo, Mich.

Filed Apr. 25, 1985, Ser. No. 726,857
Int. Cl.[4] G01L *5/06*
U.S. Cl. 73—862.47 **17 Claims**



1. A gauge for measuring the tension on an elongate flexible element, comprising:

frame having means defining spaced first and second element engaging surfaces which are stationarily supported on said frame, face in a first direction, are approximately coplanar, and are each adapted to engage one side of the element;

a tensioning member reciprocally movably supported on said frame and having thereon a third element engaging surface which is spaced from said second element engaging surface on a side thereof remote from said first element

engaging surface, faces in said first direction, and is adapted to engage the same side of the elongate element as said first and second element engaging surfaces, movement of said tensioning member relative to said frame causing said third element engaging surface to move in directions approximately parallel to said first direction between first and second positions, said third element engaging surface being approximately coplanar with said first and second element engaging surfaces in said second position, and said third element engaging surface moving from its second position to its first position in said first direction;

holding means for releasably and firmly holding the elongate element against said second element engaging surface;

first resilient means yieldably urging movement of said tensioning member in a direction corresponding to movement of said third element engaging surface from its second position to its first position; and

indicator means responsive to said movement of said tensioning member for indicating the distance between said third element engaging surface and said second position thereof, such distance being proportional to the tension in the element.

4,607,536

APPARATUS FOR SAMPLING SIMILAR LAMINAR ARTICLES

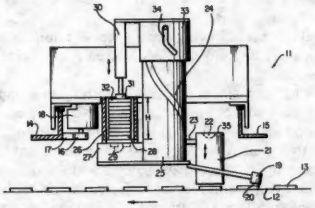
Robert Lawson, Little Chalfont; Malcolm J. Mason, and Peter I. Maris, both of St. Albans, all of United Kingdom, assignors to Baker Perkins Holdings PLC, England

Filed Feb. 7, 1984, Ser. No. 577,793

Claims priority, application United Kingdom, Feb. 11, 1983, 8303770

Int. Cl.⁴ B65G *60/00*; G01N *1/04*

U.S. Cl. 73—863.91 **9 Claims**



1. Apparatus for sampling similar laminar articles being transported on a moving conveyor, comprising:

detection means for detecting the locations of a series of said articles being transported on said conveyor past said detection means and generating corresponding detection signals thereby;

article transferring means, cooperating with said detection means, for pick up of said detected articles one at a time at a predetermined rate from said conveyor, for subsequent transfer thereof to a predetermined location;

a collection means at said location, cooperating with said article transferring means, for collecting a predetermined number of said picked up articles transferred thereto by said article transferring means:

collection controlling means, cooperating with said collection means, for periodically returning to said conveyor one of said articles previously transferred thereto in response to the subsequent transfer of each additional article, to control to said predetermined number the articles present at said collection means;

a property measuring means for periodically determining the magnitude of a property of said predetermined number of said articles collected at said collection means and generating a corresponding property measurement signal thereby; and

signal processing means for processing said detection signals and said property measurement signals, respectively, and thereby providing a data output signal representing the magnitude of said property of a predetermined number of said articles.

4,607,537

PUSHBUTTON TUNER

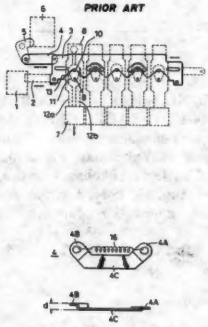
Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1984, Ser. No. 569,506

Claims priority, application Japan, Jan. 12, 1983, 58-2295[U]; Jan. 12, 1983, 58-2297[U]

Int. Cl.⁴ H03J *5/12*

U.S. Cl. 74—10.33 **3 Claims**



1. A pushbutton tuner which comprises:

a memory slide plate mounted for transverse displacement in response to a tuning operation;

a change lever responsive to said memory slide plate to actuate a tuning circuit element;

first and second pivoting means affixed to said memory slide plate and said change lever respectively; and

a generally planar connector member having a strap-shaped central portion and generally planar first and second ends thereof configured to pivotally engage said first and second pivoting means respectively, said ends of said connector member being disposed to diverge away from the axis of said central portion to engage said pivoting means on a common side of said axis, the planes of said end portions being disposed displaced from the plane of said central portion, parallel thereto, and offset on a common side therefrom.

4,607,538

ANGULAR TORQUE TRANSMISSION MECHANISM

Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar/Rhld., Fed. Rep. of Germany

Filed Aug. 8, 1984, Ser. No. 638,744

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1983, 3330311

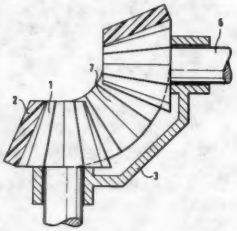
Int. Cl.⁴ F16H *1/14, 1/20, 55/17, 7/00*

U.S. Cl. 74—417 **6 Claims**

1. An angular transmission mechanism for transmitting torque between two axles arranged at an angle relative to each other, particularly for use in agricultural applications and consisting of two bevel gears provided with teeth, comprising:

an elastic toothed belt embracing said bevel gears, said

toothed belt having a surface area which, in an untensioned condition of said belt, is shaped in the form of a



truncated cone, said belt having teeth which corresponds to the teeth of said bevel gears.

4,607,539

STEERING WHEEL ASSEMBLY WITH NON-ROTATABLE CENTER HUB

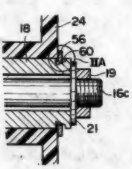
Sumitsugu Arima, Yokosuka; Hiroshi Tsuda, and Hideyuki Nagashima, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 13, 1984, Ser. No. 640,138

Claims priority, application Japan, Aug. 17, 1983, 58-126937[U]

Int. Cl.[4] B62D *1/04, 1/16*

U.S. Cl. 74—492 **7 Claims**



1. A steering wheel assembly with a non-rotatable center hub, comprising:

a steering shaft to which a steering wheel is connected to rotate therewith;

a tubular holder coaxially disposed on said steering shaft and secured thereto to rotate therewith;

an annular member concentrically disposed about said tubular holder and rotatable relative thereto, said annular member carrying thereon said non-rotatable center hub;

first means for restricting the axial movement of said annular member in one direction relative to said tubular holder;

second means for restricting the axial movement of said annular member in the other direction relative to said tubular holder; and

third means for holding said annular member stationary relative to said tubular holder even when said steering shaft and thus said tubular holder are rotated,

wherein one of said first and second means comprises an annular groove formed about said tubular holder, the rounded bottom surface of said annular groove being tapered toward the other of said first and second means, and a snap ring coaxially disposed in said annular groove with its inner wall contacting with the tapered bottom surface of said annular groove and its inboard side surface slidably contacting with an axial end surface of said annular member.

4,607,540

ADJUSTABLE AUTOMOTIVE STEERING COLUMN WITH ADJUSTABLE TILT AND TOP-POSITION LOCK

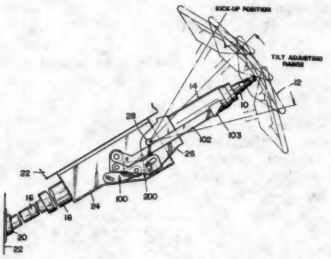
Satoshi Kinoshita, and Yoshimi Yamamoto, both of Shizuoka, Japan, assignors to Fuji Kiko Company, Limited, Tokyo, Japan

Filed Oct. 11, 1984, Ser. No. 659,765

Claims priority, application Japan, Oct. 19, 1983, 58-195848

Int. Cl.[4] B62D *1/18*

U.S. Cl. 74—493 **10 Claims**



1. An adjustable tilt steering column comprising:

a steering column receiving a steering shaft with a steering wheel attached to its free end, said steering column including a first stationary component and a second movable component which is pivotable with said steering shaft for allowing tilt adjustment of the steering shaft relative to said first component;

a first locking means associated with said steering column for locking said second component of said steering column at a selected angular position, said angular position being variable between a first upper and a second lower extremes;

second means allowing said second component to move upwardly beyond said first extreme to a third uppermost position;

a third locking means associated with said second means and responsive to operation of the latter to lock said second component at said third uppermost position;

a fourth means for recording said selected angular position during operation of said second and third means; and

a manually operable device for selectably disabling said first means to allow adjustment of said angular position to set a driving position within an adjusting range defined by said first and second extremes, for selectably activating said second means to move said second component to said uppermost position and locking the second component at said uppermost position by means of said third means, and for selectably disabling said third locking means to allow downward movement of said second component within said adjusting range to said set driving position.

4,607,541

AUTOMATIC TRANSMISSION

Masakatsu Miura, Kariya, and Takeshi Inuzuka, Anjo, both of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Anjo, Japan

Continuation of Ser. No. 380,958, May 21, 1982, abandoned. This application Mar. 21, 1985, Ser. No. 714,699

Claims priority, application Japan, May 29, 1981, 56-83087

Int. Cl.[4] F16H *57/10*

U.S. Cl. 74—758 **11 Claims**

1. An automatic transmission with four forward speeds and one reverse position, comprising:

an input shaft (7);

an output member (91);

first and second planetary gear sets (23), (24) each having a sun gear, a ring gear and a carrier supporting a pinion in mesh with the sun gear and ring gear;

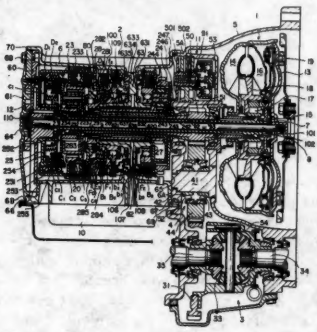
the carrier (232) of said first gear set (23), the ring gear (242) of said second gear set (24) and said output member (91) all being connected;

the ring gear (233) of said first gear set (23) connected to the carrier (241) of said second gear set (24);

a first clutch means (C1) for selectively connecting said input shaft to the sun gear of said first gear set (23), including friction elements, a piston (254) selectively engaging said friction elements and a fluid servo in which hydraulic fluid is selectively supplied to said piston;

a second clutch means (C3) for selectively connecting said input shaft (7) to the sun gear of said second gear set (24),

a third clutch means (C2) for selectively connecting said



input shaft (7) to the carrier (241) of said second gear set (24), including friction elements, a piston (255) selectively engaging said friction elements and a fluid servo in which hydraulic fluid is selectively supplied to said piston;

a first drive-establishing means for selectively preventing rotation of the ring gear of said first gear set and the carrier of said second gear set in only one direction and, alternatively, in any direction;

a second drive-establishing means for selectively preventing rotation of the sun gear of said second gear set; and

a drum (D1), (D2) being open to said first planetary gear set, with a cylindrical intermediate wall (251), an inner peripheral wall (252) and outer peripheral wall (253), and forming the hydraulic servos of said first and third clutch means (C1), (C2) between said intermediate wall and said inner peripheral wall and between said intermediate wall and said outer peripheral wall respectively.

4,607,542

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION WITH SHOCKLESS 4-3 AND 4-2 SHIFTINGS

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 17, 1984, Ser. No. 581,509

Claims priority, application Japan, Feb. 25, 1983, 58-29386

Int. Cl.[4] B60K *41/08*; F16H *57/10*

U.S. Cl. 74—869 **4 Claims**

1. A hydraulic control system for an automatic transmission which is shiftable into an nth speed ratio, an n+1st speed ratio and an n+2nd speed ratio, the automatic transmission including a first friction unit and a second friction unit, the first friction unit being engaged and the second friction unit being released during operation with the nth speed ratio, the first and second friction units being engaged during operation with the n+1st speed ratio, the first friction unit being released and the second friction unit being engaged during operation with the n+2nd speed ratio,

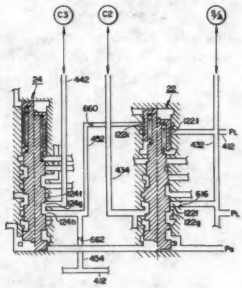
the hydraulic control system comprising:

means for generating an actuating fluid pressure;

a first shift valve having a valve element movable between a downshift position thereof and an upshift position thereof, said valve element of said first shift valve assuming the downshift position thereof during operation with the nth speed ratio, said valve element of said first shift valve assuming the upshift position thereof during operation with the n+1st speed ratio and the n+2nd speed ratio;

a second shift valve having a downshift position thereof and an upshift position thereof, said second shift valve assuming the downshift position thereof during operation of the nth speed ratio and the n+1st speed ratio, said second shift valve assuming the upshift position thereof during operation of the n+2nd speed ratio;

said second shift valve having a first port and a second port, said first port being allowed to communicate with said second port when said second shift valve assumes the



downshift position thereof, said first port communicating with the first friction unit;

means for defining a first fluid supply passage having one end communicating with said second port and an opposite end communicating with said actuating fluid pressure generating means;

a first orifice device fluidly disposed in said first fluid supply passage;

means responsive to movement of said valve element of said first shift valve for establishing a second fluid supply passage having one end communicating with said second port and an opposite end communicating with said actuating fluid pressure generating means when said valve element of said first shift valve assumes the upshift position thereof, and blocking said second fluid supply passage when said valve element of said first shift valve assumes the downshift position thereof; and

a second orifice device fluidly disposed in said second fluid supply passage.

4,607,543

DIGITAL BOTTLE OPENER

Frederick Mah, 78 LaRonde Ave., Sault Ste. Marie, Ontario, Canada

Filed Apr. 1, 1985, Ser. No. 718,449

Int. Cl.[4] B67B *7/44*, *7/16*

U.S. Cl. 81—3.09 **14 Claims**

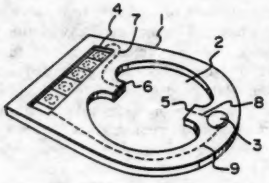
1. A bottle opener with counter comprising:

a body adapted to be hand-held by a user;

bottle-cap engaging means integral with said body adjacent one end thereof and adapted to remove the cap from a bottle when appropriate leverage is applied to said body;

counter means in said body; and

counter actuating means operatively associated with said bottle-cap engaging means and operable to increase the



count recorded by said counter means each time leverage is applied to said body in removing a cap from a bottle.

4,607,544

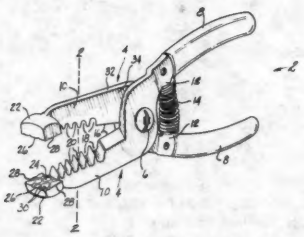
TOOL FOR CUTTING, STRIPPING AND CONNECTING ELECTRIC WIRE

Robert M. Jewell, Jr., 3221 S. Fillmore, Denver, Colo. 80210

Filed May 6, 1985, Ser. No. 730,548

Int. Cl.[4] H02G *1/12*

U.S. Cl. 81—9.4 **4 Claims**



1. A tool capable of use in the cutting, stripping and twisting of electric wire having an electrically conducting core surrounded by electrical insulating material comprising:

at least two members;

pivot means for pivotally joining said at least two members together so as to form two handles on one side of said pivot means and two extensions on the other side of said pivot means so that said at least two members can be moved to an opened or a closed relationship;

each of said extensions terminating in a jaw;

each of said jaws having a gripping surface facing each other;

an elongated portion on each of said extensions located between each of said jaws and said pivot means;

each of said elongated portions having a length, a width and a thickness wherein said length is greater than said width and said with is greater than said thickness;

each of said elongated portions having a planar surface extending in a widthwise direction so that said planar surfaces are in parallel relationship;

a linear cutting edge on each of said planar surfaces;

a plurality of semicircular cutting edges of different diameters spaced apart in a lengthwise direction in each of said planar surfaces so as to form a plurality of circular cutting edges of different diameters when said at least two members are moved toward a closed relationship;

each of said jaws having a length, a width and a thickness in directions corresponding to said length, said width and said thickness of each of said elongated portions; and

said thickness of each of said jaws being substantially greater than said thickness of each of said elongated portions so that the ends of at least two stripped electric wires may be readily grasped and twisted with the longitudinal axis of the tool parallel to the longitudinal axes of said at least two stripped electric wires.

4,607,545

ARRANGEMENT FOR STRIPPING SOLID AND STRANDED WIRES

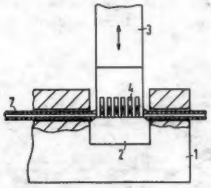
Karl Eidling, Egling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,026

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1984, 3440170

Int. Cl.[4] H02G *1/12*

U.S. Cl. 81—9.51 **3 Claims**



1. An arrangement for the stripping of thermoplastic insulated solid and stranded wires partially as well as at the ends, the arrangement comprising a comb-like melting arbor and a heated platen, the comb-like melting arbor adapted to be moveable toward the wire and equipped with a transverse groove of a size equal to the wire diameter is positioned above a uniformly heated platen having low heat conductivity, the heated platen serving as part of a wire guide, and mechanical means for pressing the arbor upon the wire with a predetermined force while it is briefly heated.

4,607,546

POWER WRENCH

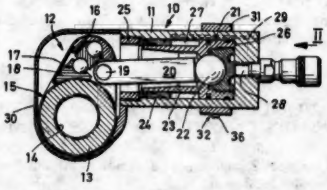
Paul-Heinz Wagner, Haus Nr. 70, D-5203 Much-Birrenbachshöhe, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 629,235

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 8319734[U]

Int. Cl.[4] B25B *13/46*

U.S. Cl. 81—57.39 **21 Claims**



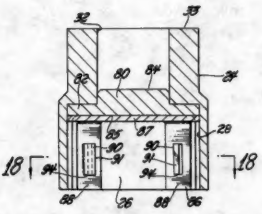
1. A power wrench comprising driving unit means for driving a wrench head, a hollow casing for internally housing said driving unit means, a support foot carried non-rotatably by said casing for offsetting reaction forces created by said driving unit means, a pressure member, and means for defining a spherical ball and socket connection between said pressure member and said support foot whereby said pressure member automatically assumes a position in total contact with a support surface to avoid local peak stresses during the operation of said power wrench, said casing includes a polygonal peripheral profile, and said support foot includes means having a profile for slidable nonrotatable locking engagement with and removal from said casing peripheral profile.

4,607,547

STRIPPED HEX HEAD DRIVE SOCKET

Donald G. Martus, 38235 Hazel Rd., Mt. Clemens, Mich. 48045

Filed Feb. 6, 1985, Ser. No. 698,970
Int. Cl.[4] B25B *13/50*; B25F *1/00*
U.S. Cl. 81—53.2 3 Claims



1. In association with a gripper mechanism for the head of a bolt, wherein the bolt head has an end face, and a series of external flat side faces and interconnecting side corners, and said gripper mechanism comprises socket wall means that forms a socket sized to fit on the bolt head; said socket wall means comprising internal flat surfaces and interconnecting internal corners; said internal flat surfaces being equidistantly spaced from the socket axis, and said internal flat surfaces being sized to closely parallel the flat side faces on the bolt head to thereby exert turning forces thereon:

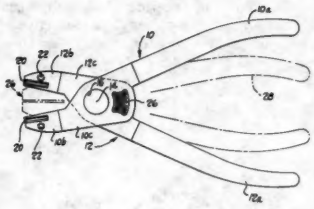
the improvement comprising means forming at least two cutter ribs projecting inwardly from the socket wall means toward the socket axis; the spacing between the innermost edges of the cutter ribs and the socket axis being less than the corresponding spacing between the external surfaces of the bolt head and the bolt axis whereby when the gripper mechanism is positioned on the bolt head, the ribs will overlie the end face of the bolt head; said ribs being spaced and oriented so that a hammering force on the gripper mechanism causes the ribs to penetrate into the bolt head and form grooves therein; the inter-engagements between the ribs and groove surfaces being such that the gripper mechanism is enabled to exert a turning force on the bolt head even though the aforementioned corners had previously worn away; each cutter rib having an axial length that is almost as great as the axial dimension of the bolt head, whereby the ribs have extensive area contact with the head matter; said rib-forming means being comprised of an insert member formed separately from the socket wall means, said insert member being snugly fittable into the socket, said insert member being removable from the gripper mechanism, whereby the gripper mechanism can be utilized without the insert member; said insert member including an end plate and a plural member of rib walls extending at right angles to said plate, said plate having the same configuration as the outline configuration of the socket whereby when the insert member is inserted into the socket, the plate prevents said insert member from rotating in the gripper mechanism; said insert member having an axial length dimension slightly less than the corresponding dimension of the associated socket so that the ends of the cutter ribs are slightly recessed from an external end surface of the socket wall means, whereby the socket wall means can be centered on the bolt head prior to application of a hammering force on the gripper mechanism.

4,607,548

PLIERS

J. Edward C. Anderson, Moreland Hills, Ohio, assignor to Milbar Corporation, Chagrin Falls, Ohio

Filed May 2, 1985, Ser. No. 729,990
Int. Cl.[4] B25B *7/02*
U.S. Cl. 81—427 13 Claims



1. Pliers comprising:

(a) a pair of pivotally connected members;

(b) each member defining a handle portion, a jaw portion and a web portion joining said jaw portion to said handle portion;

(c) structure defining a pivot in the web portions of each member;

(d) said web portions defining associated slots, mutually alignable when the members are in a predetermined relative position;

(e) each slot defining a spring seat including a tongue extending towards an intermediate region of said slot;

(f) said slot further including a spring abutment defined by an edge spaced from said tongue, said spring abutment located in spaced confronting relation with said spring seat;

(g) said slots being in an inverted relationship with respect to each other when said members are pivotally connected such that said spring seats move towards or away from each other, in spaced, but substantially parallel, rotational planes when said handle portions are moved relative to each other;

(h) a compression spring captured in said slots, one end of said spring engaging the tongue of one member, another end of said spring concurrently engaging the tongue of the other member and the spring abutment of the one member, when the members are in a predetermined position.

4,607,549

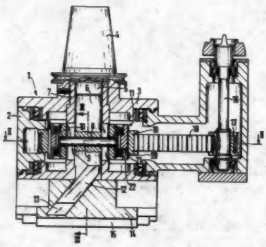
EXCHANGEABLE TURNING HEAD, PARTICULARLY A FACE TURNING HEAD

Fritz Krempel, Epfendorf, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,371
Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316867
Int. Cl.[4] B23B *29/034*
U.S. Cl. 82—2 E 6 Claims

1. A turning head, particularly a face turning head for a spindle of a machine tool, comprising a housing, a rotating part having an axis and rotatably mounted to said housing, said rotating part including a setting rod receiving bore and being axially fixed to said housing, a setting rod movable in said bore in axial directions, a tool slide movably mounted to one axial end of said rotating part, said rotating part having a slideway extending transversely to the axis of said rotating part, said tool slide being movable in said slideway and having a keyway extending at an angle to the axis of said rotating part, said setting rod having a jib key part extending into said keyway and moving said slide upon axial motion of said setting rod, a conical intermediate piece fixed to and extending from an opposite axial end of said rotating part, said intermediate piece

being axially aligned with the axis of said rotating part, a drive shaft extending substantially parallel to and being radially spaced from the axis of said rotating part, said drive shaft being mounted for rotation to said housing, an inner bearing shell fixed to said setting rod for axial and rotational motion therewith, said inner bearing shell being rotatably fixed to said rotating part for co-rotation with said rotating part and being axially movable with respect to said rotating part, an outer bearing shell rotatably mounted and axially fixed to said inner bearing shell, said outer bearing shell being rotatable with respect to said setting rod, means engaged between said outer bearing shell and said housing for rotationally fixing said outer



bearing shell to said housing while permitting axial motion of said outer bearing shell with respect to said housing, transmission means connected between said drive shaft and said outer bearing shell for moving said outer bearing shell axially and independently of said rotating part and for transmitting rotation of said driving shaft into axial motion of said outer bearing shell and thus of said setting rod, a block mass movably connected to said rotating part near said one axial end thereof, and means connected to said block mass and said tool slide to shift said block mass in respect of opposite directions to said slide for counterbalancing centrifugal forces during rotation of said rotating part.

4,607,550

TURNING MACHINE FOR MACHINING CRANKSHAFTS

Hermann Berbalk, Göppingen, Fed. Rep. of Germany, assignor to Oerlikon-Boehringer GmbH, Göppingen, Fed. Rep. of Germany

PCT No. PCT/EP83/00010, § 371 Date Sep. 16, 1983, § 102(e) Date Sep. 16, 1983, PCT Pub. No. WO83/02411, PCT Pub. Date Jul. 21, 1983

PCT Filed Jan. 18, 1983, Ser. No. 537,409

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1982, 3201320

Int. Cl.⁴ B23C *3/06, 5/18*

U.S. Cl. 82—9 **10 Claims**

1. A milling head drive for a crankshaft milling machine comprising:

(A) a housing;

(B) an external cam rotatably mounted in said housing;

(C) an internal cam rotatably mounted in said housing and located within said external cam;

(D) an eccentric wheel carried in said internal cam for milling a crankshaft;

(E) motor means mounted on said housing;

(F) coupling means connected to said motor means for coupling said motor means to said cams, said coupling means including

(1) an external shaft rotatably mounted in said housing and connected to said internal cam,

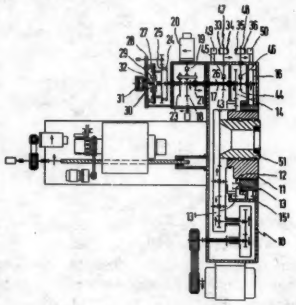
(2) a coupling gear fixedly mounted on said external shaft and connected to said motor means for rotating said external shaft,

(3) a clutch sleeve mounted on said external shaft to be movable axially of said external shaft and having a bolt fixed thereto and extending through said coupling gear for transmitting rotation of said motor means,

(4) moving means mounted on said housing for moving said clutch sleeve axially of said external shaft,

(5) an internal shaft rotatably mounted in said housing and connected to said external cam,

(6) a driver means mounted on said internal shaft and having a face surface facing said bolt to be contacted by said bolt when said clutch sleeve is moved axially of said external shaft toward said driver means, said face surface having an opening defined therein at a prese-



lected location and a ramp means associated with said opening for connecting said face surface with said opening, said driver means including an abutment wall defining one wall of said opening, and

(7) said moving means moving said bolt into contact with said face surface to engage said abutment wall when said preselected location is adjacent to said bolt for coupling said internal and external cams together via said external shaft, said clutch sleeve, said bolt, said driver means abutment wall and said internal shaft and coupling said cams to said motor means via said coupling gear and said bolt.

4,607,551

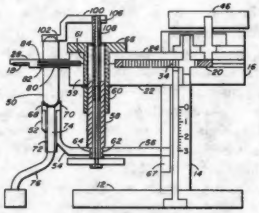
CENTRIFUGE TUBE-CUTTING APPARATUS AND METHOD

Herschel E. Wright, Santa Clara; Robert C. Wedemeyer, San Francisco, and Robert H. Giebeler, Jr., Sunnyvale, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 30, 1984, Ser. No. 646,280

Int. Cl.⁴ B26D *3/16*

U.S. Cl. 83—54 **12 Claims**



8. A method of sectioning a tube, which contains layered materials after centrifugation, comprising:

holding the tube between spaced tube-holding members which exert an axial compressive force on the tube;

causing a blade to engage the tube in a direction intersecting the tube axis;
supporting the tube and blade on the same supporting structure;
adjusting the relative positions of the tube and blade to select the desired level of separation of materials; and
causing relative movement of the blade and tube in order to cut through the tube at the selected level;
using the axial compressive force on the tube to seal the separated tube sections to the upper and lower surfaces of the blade.

4,607,552

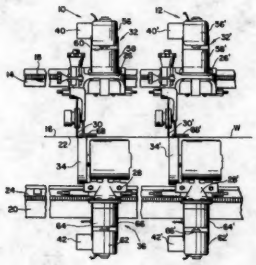
APPARATUS FOR AUTOMATICALLY CONTROLLING THE POSITION OF A PLURALITY OF SLITTERS

Steven J. Siler, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 593,688, Mar. 26, 1984, abandoned, which is a continuation of Ser. No. 443,573, Nov. 22, 1982, abandoned, which is a continuation of Ser. No. 208,520, Nov. 20, 1980, abandoned. This application Aug. 8, 1985, Ser. No. 763,850

Int. Cl.[4] B26D *5/00*

U.S. Cl. 83—71 **9 Claims**



1. An apparatus for automatically controlling the position of a plurality of slitters for slitting a moving web, said apparatus comprising in combination:
a first rail disposed adjacent to a first face of the web, said first rail defining a first indexing rack;
a second rail disposed adjacent to a second face of the web such that said first and second rails are disposed on opposite sides of the web, said second rail defining a second indexing rack;
a first housing member movably connected to said first rail such that said first housing member moves transversely relative to the web along said first indexing rack;
a second housing member movably connected to said second rail such that said second housing member moves transversely relative to the web along said second indexing rack;
a slitter blade rotatably secured to said first housing member for slitting the moving web during movement of the web between said slitter blade and said second housing member;
a first driving means secured to said first housing member for driving said first housing member and said slitter blade transversely relative to the web;
a slitter band secured to said second housing member for cooperating with said slitter blade for slitting the web between said slitter blade and said band;
second driving means secured to said second housing member for driving said second housing member and said band transversely relative to the web;
electronic control means electrically connected to said first and second driving means for selectively positioning said slitter blade and band adjacent to each other such that the web moving between said slitter blade and band is sheared by the interaction of said slitter blade with said band;
said control means further including:
a first control module secured to said first driving means;
a second control module secured to said second driving means;
a digital control computer connected to said modules for selectively controlling movement of said modules by sending said modules to a designated location using a predetermined number of driving means increments;
a monitor connected to said control computer for displaying the positions of said slitter blade and said band;
a communication bus means for electrically connecting said control computer and said modules for sequentially conducting control signals from said computer to said modules and for sequentially conducting command signals from said modules to said computer for positioning said slitter blade and said band adjacent to each other; and
wear detection switch means disposed adjacent to said slitter blade for detecting slitter blade wear, said detection switch means being electrically connected to said first control module such that when said slitter blade wears, a wear detection signal is generated and conducted from said first module to said computer for compensating for such slitter blade wear.

4,607,553

SELF-CLEARING PUNCH WITH REMOVABLE BLADE

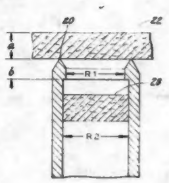
John C. Hartzell, Trenton, Mich., assignor to Hanger Hole Punches, Inc., South Lyon, Mich.

Continuation-in-part of Ser. No. 496,614, May 20, 1983, Pat. No. 4,494,426. This application Jul. 30, 1984, Ser. No. 635,510

The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.

Int. Cl.[4] B26F *1/14*

U.S. Cl. 83—164 **8 Claims**

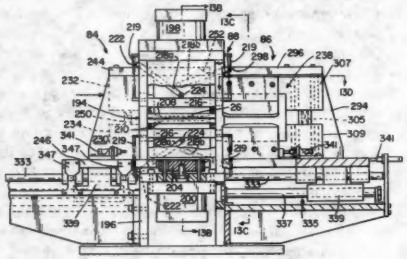


1. A self-clearing punch for cutting a slug from a sheet of material, comprising:
a punch body having an opening;
a blade having a tubular wall having a beveled cutting edge with a cutting tip having a first diameter for cutting a slug of a first thickness such that the slug has a diameter generally corresponding to said first diameter;
the blade cutting edge being beveled from the tip of the edge such that the internal diameter of the blade adjacent the cutting edge is reduced to a second diameter, lesser than said first diameter;
the blade being internally relieved to a third diameter, greater than the second diameter,
whereby as the slug is cut from the sheet material, the slug is diametrically compressed as it is received in the portion of the blade having the second diameter, the slug being suited to pass through the blade as the slug advances to the portion of the blade having the third diameter.

4,607,554
CABLE SEVERING STATION

Daniel T. Adlon, Swatara; Edward A. Bianchi, Hummelstown; Neil F. College, Elizabethtown, and George D. Reuss, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1985, Ser. No. 704,797
Int. Cl.[4] B26D *5/20*
U.S. Cl. 83—277 **12 Claims**



1. A cable severing station for severing a flat cable at a position adjacent to an electrical connector to which the cable has been terminated, the station comprising;

a cable gripping first unit having first cable gripping means movable between an open position in which the cable with the connector thereon can be fed into the first unit, and a closed cable gripping position;

a cable severing second unit having second cable gripping means, connector gripping means, and cable severing means, and being receivable within the fist unit;

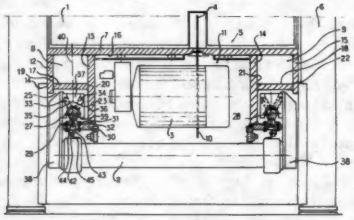
means for moving the second unit between a first position in which it is withdrawn from the first unit and a second position in which it is received within the first unit;

means provided on the first unit for actuating, when the second unit is in its second position, the second cable gripping means to grip the cable on the other side of the connector, the connector gripping means to grip the connector, and the cable severing means to sever the cable adjacent to the other side of the connector.

4,607,555
GUIDING SYSTEM FOR THE CARRIAGE OF A CIRCULAR SAWING MACHINE

Raymond Erhard, Willer-sur-Thur, France, assignor to SMID S.A., Lutterbach, France

Filed Feb. 11, 1985, Ser. No. 700,544
Claims priority, application France, Feb. 20, 1984, 84 02718
Int. Cl.[4] B27B *5/29, 29/00*
U.S. Cl. 83—471.2 **6 Claims**



1. A circular sawing machine for sawing long plates or boards comprising:

a table for supporting the boards to be sawed, said table having a longitudinally extending slot for a circular saw blade,

longitudinally extending beams underlying said table at opposite sides thereof, said beamshaving on their laterally inner sides downwardly extending partition walls defining opposite sides of a sawing channel,

longitudinally extending guide rails mounted below said beams on laterally outer sides of said partition walls,

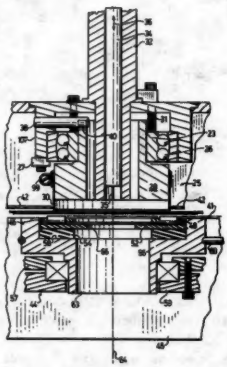
a carriage comprising a cross member disposed below said beams and rails, support brackets at opposite sides of said cross member extending upwardly laterally outside said guide rails, and rollers rotatably mounted on laterally inner faces of said support brackets and rolling on said guide rails to support said carriage on said guide rails, and

a motor and saw mounted on said cross member of said carriage.

4,607,556
COUPON CUTTING MACHINE

David C. Piggott, Burlington, Canada, assignor to PCL Packaging Ltd., Oakville, Canada

Filed Feb. 19, 1985, Ser. No. 702,741
Claims priority, application Canada, Nov. 13, 1984, 467688
Int. Cl.[4] B23D *19/08*
U.S. Cl. 83—511 **3 Claims**



1. Apparatus for cutting coupons from a plastic web, said apparatus comprising;

a peripherally continuous cutting blade surrounding an axis, means for supporting the cutting blade,

a cutting surface spaced apart from the cutting blade to permit passage of a plastic web to be cut therebetween,

a bearing cage containing cylindrical bearings surrounding said axis and extending radially relative thereto to form said cutting surface, said cylindrical bearings being rotatable relative to said case about radial axes along which said cylindrical bearings extend,

a bearing cap containing said bearing cage and permitting the bearing cage to rotate about said axes relative to said bearing cap,

resilient means between said bearing cage and said bearing cap operable to resiliently yield when the cylindrical bearings engage the cutting blade,

means for effecting relative movement along said axis between said cutting blade and said cutting surface to cause the cylindrical bearings to resiliently engage the cutting blade, and

means for rotating the bearing cap about said axis to cause rotation of the cylindrical bearings about said axis to cut a coupon from plastic web between the cutting surface and cutting blade with the bearing cage rotating relative to the

bearing cap to enable the rotational speed of the bearing cage to be less than that of the bearing cap.

4,607,557

PUNCH

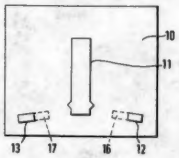
Ewald Bergmann, Rechberghausen; Otto Kurz, Hattenhofen, and Hans-Martin Dommer, Göppingen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 502,350, Jun. 13, 1983, abandoned, which is a continuation of Ser. No. 49,042, Jun. 15, 1979, abandoned. This application Aug. 22, 1984, Ser. No. 643,105

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826129; Apr. 21, 1979, 2916174

Int. Cl.⁴ B21D *28/14*

U.S. Cl. 83—687 **5 Claims**



1. Disposed upon a punch, a punching tool with respect to which a workpiece sheet is to be indexed, at each effective working stroke, to steps along an arc to punch said sheet to be separated into rotor and stator blanks for the manufacture of slotted laminations for electrical machines, comprising

notching tool means for punching at each effective working stroke at least one stator winding slot disposed along an arc of a circle and

separating punch means for punching at each effective working stroke slots to comprise a circular air gap to separate a rotor blank and a stator blank,

the separating punch means comprising two punch means disposed on said punch along an arc defining the circular air gap to be punched and spaced from each other by a distance to generate partially punched rotor and stator blanks joined at plural locations for substantially positionally stabilizing the rotor and stator blanks during successive effective working strokes.

4,607,558

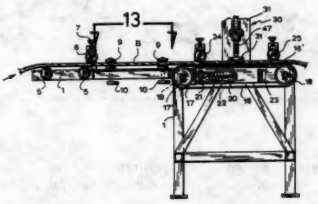
RUBBER BAND SLITTING MACHINE

Gilles Giroux, 1490 rue de l'Eglise, Pontbriand, Quebec, Canada (G0W 1K0)

Filed Apr. 8, 1985, Ser. No. 720,630

Int. Cl.⁴ B26D *3/08*

U.S. Cl. 83—879 **11 Claims**



1. An elastomeric band slitting machine comprising a support frame, conveyor means carried by said support frame and having an upper generally horizontal conveyor run for supporting and moving an elastomeric band from an inlet end to an outlet end of said conveyor means, a reaction plate underlying said conveyor upper run and fixed to said support frame intermediate said inlet and outlet ends, an upstanding framework carried by said support frame, overlying said conveyor upper run, a blade holder located above and across said conveyor upper run, movably carried by said framework for up and down guided movement opposite said reaction plate, a blade carried by said blade holder and having a straight cutting edge to make slits in the portion of said band lying over said reaction plate, power means, linkage means interconnecting said power means and said blade holder for reciprocating said blade holder up and down between an upper and a lower limit position, power actuated means to advance said conveyor upper run step-by-step from said inlet end to said outlet end, and synchronizing means for synchronizing movement of said blade holder with said power actuated means to stop said conveyor upper run and said band when said blade engages and slits said band and to advance said conveyor upper run and said band when said blade is spaced above said band, wherein said power actuated means and said synchronizing means include a driving roller for said conveyor means, a ratchet wheel fixed to said driving roller, a pawl for rotating said ratchet wheel and driving roller in a step-by-step manner, a transverse lever pivoted to said blade holder intermediate its ends and to said framework at one end and a reciprocating link pivotally connecting the other end of said transverse lever and said pawl, the latter having an operative stroke rotating said ratchet wheel through a predetermined step and thus advancing said conveyor upper run one step during upward movement of said blade holder and having a return stroke during downward movement of said blade holder.

4,607,559

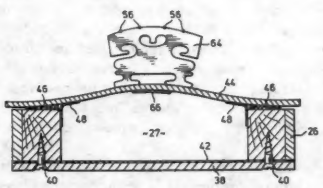
STRINGED MUSICAL INSTRUMENT

Richard Armin, 109 Vaughan Rd., Toronto, Ontario, Canada (M6C 2L9)

Filed Jan. 23, 1984, Ser. No. 572,813

Int. Cl.⁴ G10D *1/02*

U.S. Cl. 84—275 **8 Claims**



1. A bowed stringed musical instrument comprising a back, a side wall and a sound board on the upper side of the side wall, each of said back, side wall and sound board being imperforate, the side wall and sound board having sealing means connected therebetween, and defining together a body without a cavity open to the surroundings, a bridge mounted on the upper side of the sound board over which the strings are stretched, and the lower edge of the sound board being connected to the upper side of the side wall through spacers which are substantially non-transmissive of audio frequency vibrations, whereby the instrument is substantially free of transmission of audio frequency vibrations between the sound board and the remainder of the body.

4,607,560
APPARATUS FOR DYNAMICALLY SUPPORTING A HIGH STRESS STRUCTURE

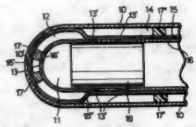
Horst Schneider, Arget, and Joachim Hermann, Duernhaar, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 627,346

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329672

Int. Cl.[4] F41F *17/08*

U.S. Cl. 89—16 6 Claims



1. An apparatus for dynamically supporting a high stress structure, comprising a first tubular member forming said high stress structure, second tubular means operatively surrounding said first tubular member for enclosing a space around said first tubular member, first means in said first tubular member for generating an operating stress inside said first tubular member, and second means for simultaneously providing a protective dynamic, supporting stress inside said space for at least partially counteracting said operating stress, wherein said second tubular means comprise a second tubular member arranged coaxially around said first tubular member, wherein said first means for generating comprise an explosive charge in said first tubular member, wherein said second means for providing said protective dynamic supporting stress comprise a first bottom at one end of said first tubular member, a second bottom at a respective end of said second tubular member for forming said space also between said first and second bottoms, and aperture means (13) in said first tubular member for passing an explosive force from said explosive charge into said space to thereby provide said protective dynamic stress inside said space simultaneously with an operating stress caused by said explosive charge in said first tubular member, said high stress structure further comprising a plastically deformable sleeve (15) inside said space, said aperture means (13) comprising at least one aperture in said first bottom and further apertures in said first tubular member along the length of said first tubular member, said plastically deformable sleeve being arranged between said first and second tubular members so as to enclose a volume adjacent said at least one aperture for receiving said explosive force in said volume, said plastically deformable sleeve normally hugging said first tubular member outside said first bottom so that a bulging ring portion (15″) of said plastically deformable sleeve (15) is progressively pushed away from said first tubular member against an inner wall of said second tubular member by an explosive force passing through said further apertures, whereby said bulging ring portion travels along the length of said first tubular member around the outside thereof to provide said protective dynamic supporting stress.

4,607,561
FIREARM REST

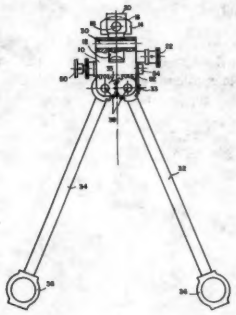
Itzchak Frimer, 75 Hayarkon St., Bnei Brak, Israel

Filed Jul. 18, 1984, Ser. No. 631,912

Claims priority, application Israel, Aug. 24, 1983, 69567

Int. Cl.[4] F41C *29/00*

U.S. Cl. 89—37.04 3 Claims



1. A firearm rest comprising:

a housing;

two legs coupled to said housing and being arranged for complementary reciprocal motion, said legs defining interlocking toothed portions at one end thereof, such that the position of one leg determines the position of the other;

means for selectably locking the legs in at least one selectable orientation and including ratchet means for selectably engaging one of said toothed portions, thereby determining the position of both legs and the height of the housing; and

firearm mounting means rotatably mounted on said housing.

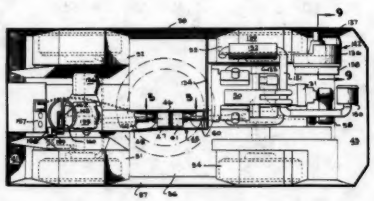
4,607,562
ARMORED VEHICLE DRIVE TRAIN

James C. LeBlanc, 38261 Long St., Mt. Clemens, Mich. 48043

Continuation of Ser. No. 456,402, Jan. 7, 1983, abandoned, which is a continuation of Ser. No. 188,922, Sep. 19, 1980, abandoned, which is a continuation of Ser. No. 927,600, Jul. 21, 1978, abandoned. This application Aug. 28, 1984, Ser. No. 644,945

Int. Cl.[4] F41H *7/02*

U.S. Cl. 89—40.03 45 Claims



1. An armored vehicle comprising:

a body of monocoque construction having a longitudinal centerline,

front and rear axle assemblies operatively connected to said body, each of said axle assemblies being provided with wheels and tires,

a suspension system operatively connecting said axle assemblies to said body and supporting said body on said axle assemblies,

a driver's station disposed at a forward location in said body,
an engine mounted in said body between said axle assemblies and on one side of said centerline, said engine having a rearwardly disposed engine output means,
a transmission mounted in said body rearwardly of said engine and operatively connected to said engine output means, said transmission having a rearwardly disposed transmission output means,
a first transmitting means for transmitting drive from said transmission output means downwardly and laterally,
a second transmitting means for transmitting drive from a lower end of said first transmitting means forwardly to said rear axle assembly,
a steering system mounted on said body and operatively connected to said front axle assembly, said steering system including a steering gear assembly mounted on said body and disposed laterally of said driver's station away from said centerline and on the side of said centerline opposite said engine,
a mounting means for mounting said steering gear assembly adjacent said front axle assembly and including a means passing through said body at a location lateral of said driver's station and operatively connecting said steering gear assembly to said front axle assembly,
a cooling system for said engine mounted in said body, and
a control means mounted in said body and operatively connected to said engine and to said transmission.

4,607,563

FIRING MECHANISM FOR AN AUTOMATIC FIRING WEAPON

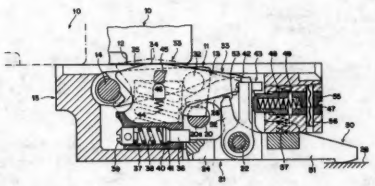
Albert Meyer, Widen; Hans Hofmann, Zürich, and Hans Häferli, Endingen, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Apr. 23, 1984, Ser. No. 603,184

Claims priority, application Switzerland, Apr. 29, 1983, 2306/83

Int. Cl.[4] F41D *11/02*

U.S. Cl. 89—132 **7 Claims**



1. A firing mechanism for an automatic firing weapon, comprising:
a breechblock having a catch surface and an underside structured as a control surface for controlling the firing mechanism;
said breechblock moving along a predetermined path of travel;
a firing mechanism housing;
a spring-loaded catch pawl;
means for pivotably mounting said spring-loaded catch pawl in said firing mechanism housing;
said catch pawl being moveable between a breechblock catch position and a breechblock release position;
said catch pawl, when in its breechblock catch position, protruding into said predetermined path of travel of the breechblock;
a firing table;
a firing lever actuatable by said firing table for pivoting said catch pawl out of its breechblock catch position into said breechblock release position;
a feeler lever pivotable out of a locking position into a release position;
a stop lever cooperating with said feeler lever;
means for pivotably mounting said stop lever in said firing mechanism housing for movement out of a release position into a locking position for retaining the feeler lever in a position into which it can be pivoted and within which position it can not be pivoted by the underside of the breechblock defining said control surface and in which the feeler lever retains the catch pawl in its breechblock release position by means of said firing lever;
a release lever cooperating with said stop lever;
means for pivotably mounting said release lever in said firing mechanism housing; and
said release lever together with said firing lever bearing upon said firing table and serving for delatching said stop lever.

4,607,564

BLOWER HOUSING ARRANGEMENT

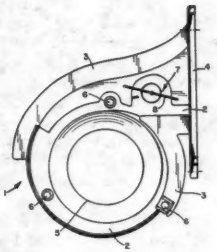
Werner Stähle, Sindelfingen; Karl-Heinz Weller, Gerlingen, and Albert Stolz, Tübingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 662,556

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 3338775

Int. Cl.[4] B60H *1/24*

U.S. Cl. 98—2 **3 Claims**

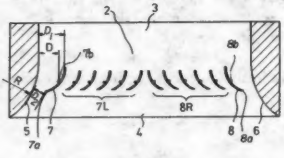


1. Blower housing arrangement for housing a blower fan and forming a connection with a duct system in a motorized vehicle, comprising:
noise reducing open-pore foam material means forming a substantial part of the wall portions surrounding the blower fan, said substantial part of the wall portions comprised of open-pore foam material defining a space through which air is guided from said blower fan to the duct system leading into the passenger space of a vehicle,
and skeleton supporting means, substantially surrounded in part by said foam material means, for aiding in supporting the foam material wall portions, said skeleton supporting means being dimensionally rigid and supportive during normal driving operations with said blower housing arrangement in the motorized vehicle, said skeleton supporting means including accommodation means for accommodating components, operating parts, installation mounting elements and the like,
wherein at least the skeleton supporting means oriented predominately in the vehicle longitudinal direction exhibits a predetermined buckling resistance which is exceeded during a vehicle accident collision, wherein, upon buckling of the skeleton supporting means the foam material wall portions facilitate energy absorption,
wherein said foam material wall portions serve as gasket means for adjustable air flap means.

4,607,565
FLOW DEFLECTING ASSEMBLY

Norio Sugawara, Shiki, and Motoyuki Nawa, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 7, 1985, Ser. No. 731,520
Claims priority, application Japan, May 10, 1984, 59-93415; Jul. 19, 1984, 59-150007
Int. Cl.[4] F24F 7/00, 13/00
U.S. Cl. 98—40.24 6 Claims



1. A flow deflecting assembly comprising:

a fluid passage generally rectangular in cross section defined by a pair of parallel opposed broad walls disposed with a short distance therebetween and a pair of opposed narrower walls disposed with a longer distance therebetween, and having an inlet and an outlet, said narrower walls have opposed faces that curve outward in the vicinity of said outlet to form guide walls,

a pair of flow deflecting blades of curved profile extend between said broad walls and are mounted to rotatable center shafts, said blades being respectively disposed in the vicinities of but spaced from said curved faces of said guide walls, the gaps between said shafts and said curved faces of guide walls being smaller than the radius of curvature of said curved surfaces of said guide walls, the downstream edge of said blades being disposed upstream of said passage outlet and downstream of the starting point of said curved surfaces of said guide walls so that said blades can be adjusted to induce attachment of the flow to said curved faces, and

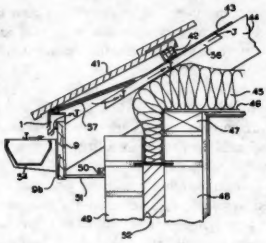
a row of deflecting blades of curved profile, which extend between said broad walls and are held in an angle-adjustable manner, are disposed between said pair of deflecting blades with predetermined pitches therebetween.

4,607,566
VENTILATOR FOR USE IN A ROOF STRUCTURE

David Bottomore, Huddersfield, and Colin F. Gibson, Long Eaton, both of United Kingdom, assignors to Glidevale Building & Products Limited, Pinxton, United Kingdom

Filed Jan. 10, 1985, Ser. No. 690,663
Claims priority, application United Kingdom, Jan. 12, 1984, 8400758; Aug. 25, 1984, 8421657
Int. Cl.[4] E04B 7/18
U.S. Cl. 98—37 15 Claims

14. A ventilator for use in a roof structure of the type having a fascia and cover material at least partially overlying the fascia, said ventilator comprising a panel member, spacing means engageable with a face of the fascia for spacing the panel member from the face of the fascia to define a first ventilation path between the fascia and the panel member, the spacing means being engageable with an upper edge of the fascia to define a second ventilation path between the cover material and the fascia, said first ventilation path communicating with said second ventilation path, and said spacing means further comprises a plurality of spacing members provided on the panel member wherein each spacing member includes a first

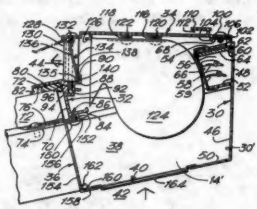


portion engageable with the face of the fascia and a second portion engageable with the upper edge of the fascia.

4,607,567
GREENHOUSE CONSTRUCTION PROVIDED WITH SPECIAL RIDGE FOR VENTILATION

Christopher Esposito, West Bay Shore, N.Y., assignor to Four Seasons Solar Products Corporation, Farmingdale, N.Y.

Continuation of Ser. No. 280,992, Jul. 6, 1981, Pat. No. 4,438,680, which is a continuation-in-part of Ser. No. 77,786, Sep. 21, 1979, Pat. No. 4,316,405. This application Dec. 27, 1983, Ser. No. 565,989
Int. Cl.[4] A01G 9/24; F24F 7/00
U.S. Cl. 98—42.12 9 Claims



1. A method for the installation of a greenhouse against a supporting structure comprising forming two sloped pockets, mounting at least one of the pockets against said supporting structure, supporting the other of the pockets in fixed and spaced relation with respect to said one pocket and supporting structure, inserting an end of at least one glazing bar into said one pocket, and inserting glazing into said other pocket and superposing said glazing on said glazing bar.

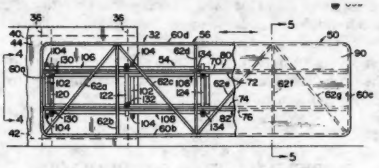
4,607,568
EXTENSIBLE LINE BRATTICE

George R. Hill, Pleasant Grove, and Larry C. Jordan, Vance, both of Ala., assignors to Jim Walter Resources, Inc., Birmingham, Ala.

Filed Aug. 7, 1985, Ser. No. 763,115
Int. Cl.[4] E21F 1/00
U.S. Cl. 98—50 5 Claims

1. In a mine, an extensible line brattice comprising a fixed line brattice having at least one free end; said fixed line brattice comprising spaced vertical support members and a brattice cloth attached to said spaced vertical support members to form an airtight curtain in said mine, a track system affixed to said free end of said fixed line brattice, said track system being

affixed to at least two of said vertical support members and an extensible line brattice frame with an attached brattice cloth



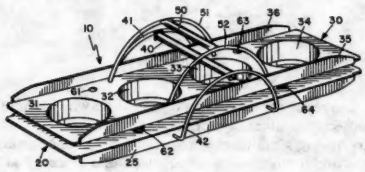
cover connected to said track system for horizontal movement of said extensible line brattice to elongate said fixed line brattice.

4,607,569

EGG-FRYING UTENSIL

Glenn M. Murphy, 1378 Los Coches Ct., Chula Vista, Calif. 92010

Filed Dec. 26, 1984, Ser. No. 685,915
Int. Cl.[4] A47J *37/00*
U.S. Cl. 99—426 **6 Claims**



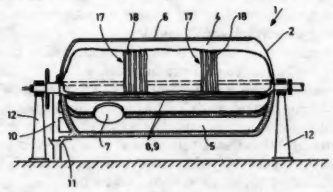
1. A utensil for use in frying eggs, which comprises:
a lower frame member defining a set of outer rings in which to fry eggs on a grill;
an upper frame member defining a corresponding set of inner rings, each one of the set of inner rings being slightly smaller than a corresponding one of the set of outer rings;
means for movably mounting the upper frame member on the lower frame member to enable each one of the inner rings to be slid down the interior of the corresponding one of the outer rings to dislodge fried eggs as the upper frame member and the lower frame member are lifted from a grill.

4,607,570

COMPRESSION EXTRACTOR

Hans-Ulrich Hauser, Niederweningen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Filed Aug. 9, 1984, Ser. No. 639,378
Claims priority, application Switzerland, Aug. 26, 1983, 4657/83
Int. Cl.[4] B30B *5/02*
U.S. Cl. 100—116 **8 Claims**



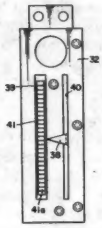
1. A compression extractor for use in extracting liquid from a liquid containing material, said compression extractor comprising:
(a) a tank,
(b) membrane means mounted in said tank for dividing said tank into a pressure chamber and a mash chamber said membrane means having a surface facing said mash chamber,
(d) means for introducing a pressure medium into said pressure chamber so as to cause said membrane means to press against said liquid containing material in said mash chamber thereby extracting said liquid therefrom,
(e) liquid collection means coupled to said mash chamber for collecting said extracted liquid; and
(f) draining path defining means incorporated on at least a portion of said surface of said membrane means facing said mash chamber for conveying said extracted liquid toward said liquid collection means.

4,607,571

METHOD FOR ADJUSTING AN INK FOUNTAIN IN A PRINTING PRESS AND INK FOUNTAINS

Hideo Takeuchi, Chiba; Michiaki Kobayashi, Kitamoto, and Makoto Shibasaki, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1983, Ser. No. 561,993
Claims priority, application Japan, Dec. 21, 1982, 57-224620; Aug. 31, 1983, 58-160134; Aug. 31, 1983, 58-160135; Aug. 31, 1983, 58-134845[U]
Int. Cl.[4] B41F *31/04, 33/00, 33/16*; B41L *27/06*
U.S. Cl. 101—365 **5 Claims**



1. An ink fountain for feeding ink toward an inking mechanism through a gap between a ductor blade and an ink fountain roller, wherein the ductor is divided into a plurality of regions, each region of said ductor blade being movable at its distal end toward and away from a surface of the ink fountain roller to adjust said gap by a corresponding adjusting member, said ink fountain comprising:
(a) a display box adjacent the ductor blade; and
(b) a plurality of adjusting units detachably disposed in the display box, each adjusting unit corresponding to a respective said region of the ductor blade, each adjusting unit having a position display means for displaying a preset position, which is preset before printing, of each region of the ductor blade, the preset position being determined based on a rate of pattern area detected from a pattern bearing material, an adjusting member for adjusting a position of the ductor blade, and a position indicating means responsive to the adjusting member for indicating the actual position of each region of said ductor blade, said position display means, said adjusting member and said position indicating means being integrated with one another to form each detachable adjusting unit, wherein each adjusting unit comprises a said position display means which has a plurality of display elements disposed in a row, said position indicating means having a pulley fixed to the adjusting member, a belt moved by the pulley and an indicator fixed to a linear span of the belt, the

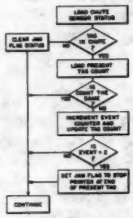
indicator being movable along the position display means when the adjusting member is rotated.

4,607,572

PRINTER AND METHOD USING AUTOMATIC STACKER WITH PAPER CONDUIT JAM DETECTOR

Frederick M. Pou, Dayton, and Richard L. Straub, Miamisburg, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 575,947, Mar. 26, 1984, abandoned, which is a division of Ser. No. 393,674, Mar. 30, 1982, abandoned. This application Aug. 12, 1985, Ser. No. 765,163
Int. Cl.[4] B41F *1/02*
U.S. Cl. 101—426 11 Claims



1. In a printer for printing information onto tags, said printer having a conduit having a first end to which printed tags are delivered and a second end from which the printed tags are expelled, the improvement comprising mean for indicating a jam condition in the conduit and terminating the printing of additional tags whenever the number of tags present in the conduit exceeds a predetermined number, said jam condition indicating means comprising:

counting means that is incremented each time a tag is produced;

means for sensing the presence of a tag in the conduit;

means responsive to said sensing means and to said counting means for providing a signal representative of the number of tags delivered to the conduit while the presence of the tag in the conduit is being sensed; and

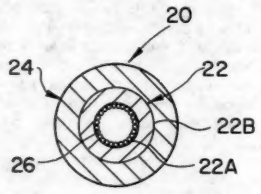
means responsive to said number of tags delivered representative signal for terminating the printing of additional tags after said number representative signal reaches a predetermined value.

4,607,573

LAMINATED FUSE AND MANUFACTURING PROCESS THEREFOR

Gary R. Thureson, Avon, and Ernest L. Gladden, Granby, both of Conn., assignors to Ensign-Bickford Industries, Inc., Simsbury, Conn.

Filed Apr. 3, 1984, Ser. No. 596,449
Int. Cl.[4] C06C *5/04;* F42B *3/10*
U.S. Cl. 102—275.8 14 Claims



1. A method of producing a fuse comprising the steps of:

(a) forming a first tube having an inner surface and an outer surface;

(b) placing a reactive material in a core load per unit length within said first tube;

(c) elongating said first tube whereby the wall thickness of said first tube and core load per unit length of said reactive material are reduced; and

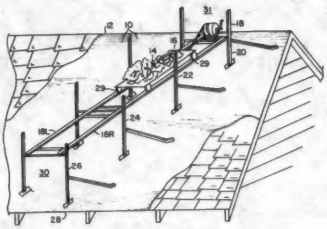
(d) applying an outer coating onto said outer surface of said first tube, said coating arranged coextensively to said elongating first tube.

4,607,574

CONVEYING SYSTEM FOR ROOFTOPS

Gerard B. Richards, 1618 Shreen Ct., San Jose, Calif. 95124

Filed Jul. 2, 1985, Ser. No. 751,295
Int. Cl.[4] E01B *23/00*
U.S. Cl. 104—126 3 Claims



1. A conveyor for carrying a load that may be assembled on a sloping surfaces that comprises:

a cart having a platform with a top side for supporting said load and a plurality of wheels attached to said platform;

a straight continuous track on which said wheels may roll, which has a loading end and a destination end, and which further comprises a left track member spaced parallel to a right track member by a plurality of connecting bars, each end of each bar being rigidly secured to one of said track members and each bar having at least two boltholes;

a plurality of horizontal center bars, each having two bar ends and positioned under said left and right track members so as to support said track;

a plurality of U-bolts, each enveloping one of said center bars and secured in said boltholes of an adjacent connecting bar so that said track is rigidly secured to said center bars;

a vertical support sleeve secured on each said end of said center bars;

a vertical leg positioned by sliding within each support sleeve and having a row of positioning holes in its side into one of which a supporting pin may be inserted in order that an end of said support sleeve may rest on said pin and thereby determine the location of said support sleeve so as to maintain said center bar horizontal even though said conveying system is mounted on said sloping surface and wherein each said vertical leg has a hinging hole near its lower end;

a bracing sleeve positioned by sliding on each said leg and secured by a pin in said positioning hole at each end of said bracing sleeve so that said bracing sleeve can be oriented independent of said leg to any angular position about its axis by rotation about said leg;

a threaded stud attached to each said bracing sleeve and perpendicular to said bracing sleeve;

a U shaped strap having two ends such that each end has a hole concentric with said hole in said other end of said strap and, further, said U strap has a hole in its center through which said threaded stud is inserted so that said strap may be bolted to said bracing sleeve yet may be positioned by rotation about said stud;

a brace having a first end hinged to each U strap by a pin through a first hole near said first end and said hole in each

end of said strap and wherein said brace has a second hole near a second end of said brace;

a shoe for each said brace and each said vertical leg comprising a plate with a securing hole and two ears, each having an earhole and each ear being attached to an edge of said plate so that said shoe may be attached to said second end of each brace and said lower end of each vertical leg by a pin through said earholes and said second hole of said brace and said hinging hole of said vertical leg;

so that each said leg, U shaped strap, shoe, brace and bracing sleeve may be positioned by rotation independent of one another in order that each said shoe will lie flat on said sloping surface regardless of the direction of slope and each said shoe may be secured to said sloping surface by a nail through each said securing hole.

4,607,575

VARIABLE-PATH SURFACE TRANSPORT SYSTEM UTILIZING AN ANGLE COMPARATOR WITH A CONTROL GUIDEWAY OR EXTERNALLY SUPPLIED DATA FOR LATERAL OFFSET, AND METHOD

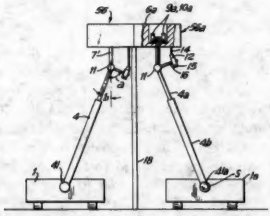
Roland Bryda, Kapellenstrasse 64, D-7500 Karlsruhe 1, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,547

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1983, 3330993

Int. Cl.[4] B61B *10/00, 11/00*

U.S. Cl. 104—304 **20 Claims**



1. A variable-path, directionally controlled surface transport system having

an electrically driven vehicle **(1)** for operation on a surface, and having a steering system **(17, 17*a*)**;

an overhead system **(56, 56')** including current supply conductors **(5)** and direction control rails **(6, 6*a*)**;

a connecting element **(4, 4*a*)** connecting the vehicle to the current supply conductors to receive drive energy, and to the direction control rails **(6, 6*a*)** to receive direction information data therefrom to guide the path of the vehicle,

and comprising, in accordance with the invention,

a further control guideway **(12)** located adjacent the overhead system;

feeler means **(15, 16)** sensing the relative position of the further control guideway with respect to the overhead system **(56)**;

and a comparator **(11, 11*a*, 101)** coupled to the feeler means and to the connecting element for generating path deviation control signals **(Δa)**, said path deviation control signals being applied to the steering system **(17, 17*a*)** of the vehicle **(1, 1*a*)** to steer the vehicle along a path which may be, at any selected point, laterally offset a selected distance with respect to said overhead conductors **(5)** and rails **(6, 6*a*)**, as a function of the relative position of the guideway **(12)** with respect to the connecting element **(4, 4*a*)**.

17. A method of controlling the path of a surface vehicle in which an overhead system **(56)** including current supply conductors **(5)** and direction control guide rails **(6)** is coupled to a car or vehicle **(1)** by a connecting element **(4)** connecting the vehicle to the current supply conductors, and further providing direction control information to steer the vehicle in a path which is, at each point along said path, a preselected distance laterally from a position directly beneath the overhead system, as a function of the orientation of the connecting element **(4, 4*a*)** with respect to the guide rails **(6)**,

comprising the steps of

generating direction control signals which correspond to said preselected distances and are arbitrary with respect to the instantaneous orientation of the connecting element **(4, 4*a*)** with respect to the guide rails **(6)**; and

controlling the direction of movement of said vehicle in accordance with said control signals.

4,607,576

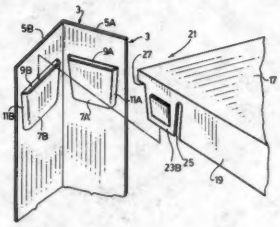
PANEL MOUNTING ARRANGEMENT

Stan Kranjec, 355 Signet Drive, Weston, Ontario, Canada (M9L 1V3)

Continuation-in-part of Ser. No. 670,942, Nov. 13, 1984, abandoned. This application Dec. 26, 1985, Ser. No. 813,349

Int. Cl.[4] A47B *57/20*

U.S. Cl. 108—110 **5 Claims**



1. A shelving arrangement in which at least one shelf panel is mounted in a generaly horizontal position from a plurality of up right support members, each of said support members having a pair of mounting surfaces at generally right angles to one another and each mounting surface being provided with an inwardly facing upwardly opening pocket press formed from its respective mounting surface whereby each pocket is top and bottom opening and is side edge secured to the mounting surface from which it is formed, said shelf panel having a down turned flange including corner regions for interlocking at said upright support members, each corner region including first and second tongue portions at right angles to one another on said down turned flange which is open to either side of each tongue portion with said first and second tongue portions of said corner regions sliding downwardly into said first and second pockets of said upright support members during assembly of said shelving arrangement, each said mounting surface having an inwardly directed region extending at least into the plane of the pocket below the bottom opening thereof and each tongue after penetrating through the pocket wedging on said inwardly directed region and the side edges of the pocket converging downwardly inwardly for outer edge wedging with the tongue for a double wedge tightened fitting of the tongue and pocket.

4,607,577

OVERBED TABLE

Stephen V. Leonardo, 1128 Blanchard St., Downers Grove, Ill. 60515

Filed Aug. 2, 1985, Ser. No. 761,775

Int. Cl.[4] A47B *9/00*

U.S. Cl. 108—144 **11 Claims**

1. In an overbed table having a base, a table top generally overlying said base, and an adjustable support assembly having its lower end secured to the base and its upper end to the table

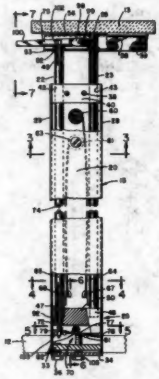
top and allowing the table top to be moved to any desired vertical position and locked, said support assembly comprising:

a hollow support housing vertically mounted to said base having a bearing block with guide apertures;

support members axially slidable within said guide apertures and carrying a second bearing block slidable within said housing;

first spring means connected between said housing and said support members for urging said support members and table top upwardly and counterbalancing the weight thereof;

a latch mounted to said second bearing block for pivotal movement about a horizontal axis and having a free end extending outwardly from said second bearing block;



second spring means disposed between said second bearing block and the other end of said latch for urging said other end away from said second bearing block in one angular direction and said free end towards a locking position in wedged engagement with the wall of said housing to lock said support members relative to said housing;

a trigger mounted to said table top; and,

a cable extending between said trigger and said other end of said latch, whereby actuation of said trigger pulls said cable upwardly to pivot said latch in an angular direction opposite the action of said second spring means out of engagement with said wall to unlock said support members thereby permitting vertical movement of said support members within said support housing for adjusting the height of the table top relative to the base.

4,607,578

POSITIONING MECHANISM

Hirochika Inoue, Tokyo; Ken-ich Yoshida, Osaka; Yasushi Kida, Osaka, and Akira Takemoto, Osaka, all of Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Jun. 1, 1984, Ser. No. 616,085

Claims priority, application Japan, Jun. 2, 1983, 58-99203; Jun. 13, 1983, 58-106301

Int. Cl.[4] A47B 9/00

U.S. Cl. 108—145 **5 Claims**

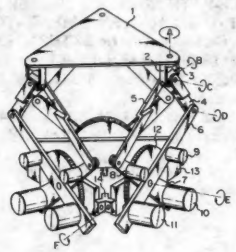
1. A positioning apparatus comprising a table, a base, and three pantagraph means for supporting said table at three connection points in spaced relation to said base, each said pantagraph means including:

a pair of upper links,

a pair of lower links,

means for pivotally connecting a lower end portion of each said upper link to an upper end portion of a respective one of said lower links;

upper support means for operatively connecting an upper end portion of each said upper link to a respective one of said table connection points, said upper support means including (a) an upper coupling member having a pair of mutually orthogonal axles respectively defining first and second upper pivot axes which are, in turn, mutually orthogonal to one another and which are parallel to a plane of said table, said upper end portion of each said upper link being connected to a first one of said axles for pivotal movements about said upper first axis, (b) a coupling retainer connected to a second one of said axles for pivotal movements about said second upper axis, and (c) means for connecting said coupling retainer to said table at said respective one of said table connection points for pivotal movements of said coupling retainer, and thus said pairs of upper and lower links, about an axis orthogonal to said table plane; and



lower support means for operatively connecting a lower end portion of each said lower link to said base, said lower support means including (i) first shaft means defining a first lower pivot axis, parallel to said first upper pivot axis, for connecting said lower end portions of each said lower link to said base for pivotal movements about said first lower axis, and (iv) second shaft means defining a second lower pivot axis, orthogonal to said first lower axis but parallel to said second upper axis, for connecting said lower end portions of each said lower link to said base for pivotal movements also about said second lower axis, wherein

said upper and lower pairs of links form a quadrilateral structure such that said three pantagraph means permit said table to be positionable within six degrees of freedom by selective regulation of inclination angles of said pairs of lower links relative to said base.

4,607,579

APPARATUS FOR DISPERSING A DYE OVER SECURITIES IN A CLOSED SPACE AT ATTEMPTS AT BURGLARY

Eddie L. Stenild, 2, Fugleb kvej, Kastrup, 2770, Denmark

PCT No. PCT/DK83/00015, § 371 Date Oct. 18, 1983, § 102(e) Date Oct. 18, 1983, PCT Pub. No. WO83/02975, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 16, 1983, Ser. No. 545,391

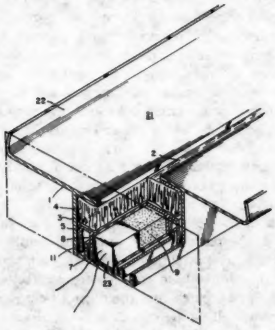
Claims priority, application Denmark, Feb. 18, 1982, 715/82

Int. Cl.[4] E05G 3/00

U.S. Cl. 109—25 **8 Claims**

1. An apparatus for dispersing a dye over securities kept in a closed space, at attempts to break open such a space, e.g., a trunk or a safe-deposit box, and of the kind where a pipe system including a pipe and containing the dye is adapted, at unwarranted attempts at opening, to be activated by a release mechanism to release pressure energy for dispersing the dye over the securities, characterized in that said pipe comprises a longitudinal pressure rail constituting a portion of the wall of an oblong chamber, said chamber containing a tubular bag with a dye, the wall of said chamber situated opposite to the pressure rail being perforated by one or more longitudinal slots, said pressure rail

being displaceable toward said opposite wall at release of pressure energy to compress said bag and force said dye out through said slot, said pipe system comprising a box-shaped profiled housing wherein the dye bag and the pressure rail are arranged in a common space, said pressure rail being T-shaped



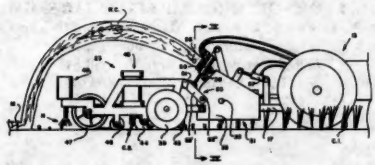
with a body, the top wall of the housing being interrupted by the longitudinal slot, and the bottom wall comprising two upright supporting walls surrounding the body of the pressure rail, said body forming a chamber with an explosive charge which is ignited by an electronic ignition system and having below a bottom formed with rupture indications.

4,607,580

CROP PLANTING MEANS

Charles Monty, Jr., Clarksdale, Miss., assignor to Monty Planting Company, Inc., Clarksdale, Miss.

Filed Feb. 19, 1985, Ser. No. 702,956
Int. Cl.[4] A01B *49/04*
U.S. Cl. 111—1 **1 Claim**



1. A planter for planting a second crop in a field having a first crop thereon, said planter comprising:

(a) cutting means for cutting and removing the majority of the first crop from the field; and

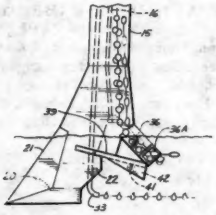
(b) planting means located behind said cutting means for planting the second crop after said cutting means cuts and removes the majority of the first crop from the field; said cutting means including discharge means for directing the cut portion of the first crop upward and over said planting means and for allowing the second crop to be planted with the majority of the first crop removed from the field and to subsequently allow the cut portion of the first crop to fall onto the field over the planted second crop to act as a mulch; said cutting means including an elongated shaft member arranged substantially transversely of the direction of travel of said planter over the field, drive means for rotatably driving said shaft member, a plurality of cutting blade members attached to said shaft member and for cutting the majority of the first crop as said planter is moved thereover, and a hood member for covering said shaft member and said cutting blade members, said hood member having an elongated discharge opening therethrough extending substantially the entire length of said shaft member and located generally at the upper rear of said hood member, said hood member having an inner face surface for coacting with said cutting blade members to cut the majority of the first crop as said planter is moved thereover and to cause the cut portion of the first crop to be discharged from said hood member through said discharge opening, said discharge opening and said inner face surface coacting to define said discharge means; said planting means including a plurality of planter units arranged apart from one another substantially transversely of the direction of travel of said planter over the field for planting a plurality of rows of the second crop as said planter is moved over the field; each of said planter units including a disc for cutting a slit into the field, double disc opener means for opening the slit cut by said disc, a seed dispensing means for dispensing seeds for the second crop into the slit cut into the field by said disc, slit closing means for closing the slit after the seeds have been dispsed thereinto, ground firming roller means for closing the slit after the seeds have been dispensed thereinto, and a chemical dispensing means for dispensing chemical after the seeds have been dispensed.

4,607,581

FURROW OPENER FOR SEEDER

Ivyl D. Kopecky, Ypsilanti, N. Dak., assignor to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed Jul. 18, 1984, Ser. No. 632,056
Int. Cl.[4] A01C *5/00*
U.S. Cl. 111—73 **9 Claims**



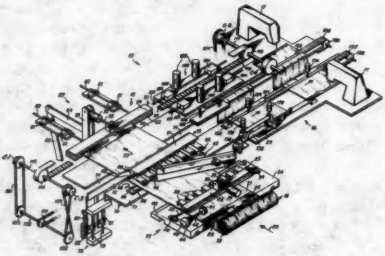
1. A shank for a seeder having furrow opening means at the lower end thereof for penetrating the ground to a desired level to form a main furrow, a sealer plate mounted on said shank above the bottom of the main furrow and trailing the leading portion of the furrow opening means, said sealer plate being below ground level with the shank at working depth and having wedge shaped side portions along opposite sides thereof with each side portion having surfaces that converge downwardly and which define edges that are to the exterior of the furrow opened by the shank, the edges also tapering downwardly in rearward direction, the side portions having facing surfaces on each of the opposite wedge shaped portions that taper toward each other in rearward direction, the side portions forming small auxiliary furrows laterally of the shank below the ground by packing the earth to provide a firm seed bed, said means defining spaced seed outlets on the shank for depositing seed in each of the auxiliary furrows.

4,607,582

AUTOMATIC TOWEL ALIGNING, CUTTING AND HEMMING SYSTEM

Charles E. Brocklehurst, Fountain Inn, S.C., assignor to Opelika Manufacturing Corporation, Chicago, Ill.

Filed Jun. 18, 1984, Ser. No. 621,935
Int. Cl.[4] D05B *27/12, 25/00;* B26D *5/00;* B65H *23/16*
U.S. Cl. 112—121.12 14 Claims



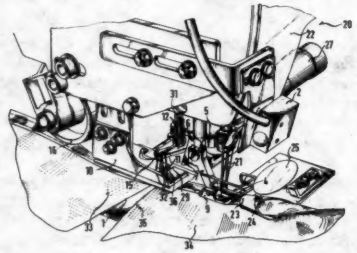
1. Apparatus for straightening the laterally extending bands of a supply of terry cloth toweling as the toweling moves along its length through a predetermined path comprising feed means extending across the path, biasing means for urging the toweling toward frictional engagement with said feed means at intervals across the toweling whereby the toweling engages the feed means and the feed means pulls the toweling along the path, detecting means positioned up the path from the feed means for detecting the movement of a laterally extending band of the toweling at intervals across the toweling as the band approaches the feed means, and relief means responsive to the detection of a band by the detecting means for relieving the force of the biasing means at the interval across the toweling which corresponds to the interval where the detection of the band is made.

4,607,583

CUTTING DEVICE IN A SEWING MACHINE FOR CUTTING AT LEAST ONE THREAD CHAIN OR A SEWN-ON TAPE

Kurt Biermann; Gerhard Steppat, and Bodo Wehmeyer, all of Bielefeld, Fed. Rep. of Germany, assignors to Durkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jan. 8, 1985, Ser. No. 689,701
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1984, 3400697
Int. Cl.[4] D05B *37/04, 65/00*
U.S. Cl. 112—130 12 Claims



1. A cutting device for a sewing machine for cutting a thread chain, which said thread chain connects two successive sewn parts which are moving along a path through the sewing machine; the sewing machine including a sewing needle and including means for moving the needle to sew said parts, and the needle operates at a sewing place in the sewing machine;

the cutting device comprising cutting means supported on the sewing machine, and the cutting means being movable generally in a direction transversely across the path of the sewn parts; the cutting means being shaped and the motion thereof being oriented to cut the thread chain close to the adjacent edges of successive sewn parts;

the cutting device further comprising a sensor upstream in the path from the sewing place for scanning the parts to be sewn which are moving past the sensor for detecting an edge of one of said parts moving past the sensor;

a needle stitch counter connected with the sensor for being started in operation upon the sensor signaling that it has scanned an edge of a sewn part; the stitch counter being connected with the sewing machine for halting further sewing needle operation following a preset number of stitches by the sewing needle;

downstream of the sewing place, a sewn part holder being disposed at the path of sewn parts and being adapted for holding the sewn parts; the holder being shaped to include a cutout opening which extends transversely across the path of the sewn parts, and the cutout being defined by a downstream wall of the cutout in the holder which trails the opening along the path of travel of the sewn parts and by an upstream wall of the opening of the holder which leads the opening along that path; the cutting means being disposed for movement across the path of the sewn parts and along the cutout in the holder;

a thread engaging hook; means for supporting and for moving said hook up and down and across the path of the sewn parts, and the hook being movable through the cutout; the hook having an engaging part for engaging the thread chain, which is then at the cutout upon upward motion of the hook through and then above the cutout;

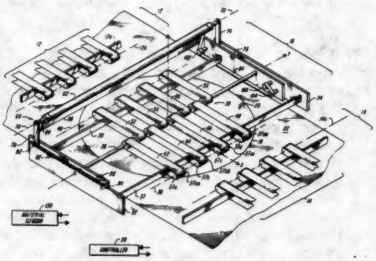
sewn material transport means downstream in the path of the sewn parts from the cutout for engaging a sewn part, and the transport means including an intermittent drive for imparting intermittent drive motion along the path of travel upon the sewn parts traveling past the transport means.

4,607,584

SYSTEM FOR FOLDING LIMP MATERIAL SEGMENTS

Philip N. Bowditch, Cohasset, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Oct. 9, 1984, Ser. No. 658,511
Int. Cl.[4] D05B *35/00, 19/00*
U.S. Cl. 112—147 12 Claims



1. A system for folding a limp material segment, said segment having a maximum linear dimension D, comprising

A. means for supporting said segment including a substantially planar support surface for said segment, said support surface having linear dimensions equal to or greater than D,

B. selectively operable belt assembly including a matrix of elongated, substantially parallel endless belts overlying

said support surface, each of said belts including a lower planar surface opposite and substantially parallel to said support surface, said belts being selectively movable in the direction of elongation of said belts,

C. selectively operable means for rotating said support surface with respect to said belt matrix about a reference axis perpendicular to said support surface,

D. a fold-locus-defining assembly including a sheet member and associated sheet means for positioning said sheet member, said sheet member having a substantially rigid, straight leading edge, and said positioning means including selectively operable means for retractably positioning said leading edge and adjacent portions of said sheet member between said support surface and said lower surfaces of said belts and in a plane parallel to said support surface, whereby said leading edge is substantially perpendicular to the direction of elongation of said belts,

E. sensing means for generating position signals representative of the position of a segment on said support surface,

F. selectively operable belt positioning means for positioning said belt assembly with respect to said support surface in the direction of said reference axis,

G. controller including means responsive to said position signals and to applied signals representative of a desired fold locus on said segment for controlling said belt assembly, said rotating means, said fold-locus-defining assembly and said belt positioning means to fold said material segment about a linear fold locus.

4,607,585

SEWING MACHINE HAVING A PROGRAM CARRIER

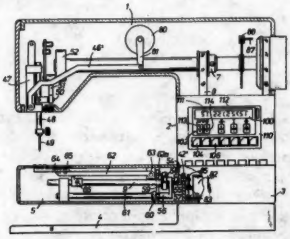
Günter Meier, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Dorina Nähmaschinen GmbH, Fed. Rep. of Germany

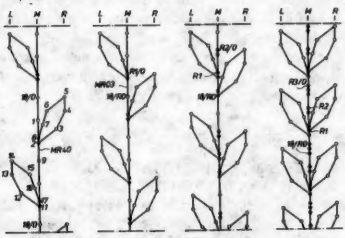
Filed Sep. 16, 1983, Ser. No. 532,829

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235078

Int. Cl.[4] D05B *3/02*

U.S. Cl. 112—454 **5 Claims**





1. In a sewing machine including a rotatable drive shaft driving a needle for vertical upward and downward movement in a swing arm which is connected to the shaft for selected pivotal swing movement through a selected needle bight distance during its vertical reciprocation, a feed dog which is movable selectively upwardly and downwardly and back and forth in a feed direction for engaging and moving a workpiece material in selected directions, a needle swing control for controlling the swing movement of said needle mounted on the sewing machine, and a workpiece feed control for controlling feed of the workpiece mounted on the sewing machine, the improvement comprising a bight program storage for storing information on needle swing to form a plurality of different predetermined multistitch patterns, a workpiece program storage for storing information on workpiece feed for forming the plurality of different predetermined multistitch patterns in conjunction with said bight program storage, selector means connected to said bight and workpiece program storages and to said needle swing and workpiece feed controls for selecting and sewing a sequence of said plurality of different patterns to be sewn in a forward direction, and backstitch generating means operatively connected to said workpiece feed control for selectively inserting at least one backstitch which is formed in a direction opposite to said forward direction between individual patterns of said sequence of patterns formed by said selector means whereby the sequence of patterns formed with said at least one backstitch between patterns appears different from a sequence of said patterns without at least one backstitch between patterns.

4,607,586

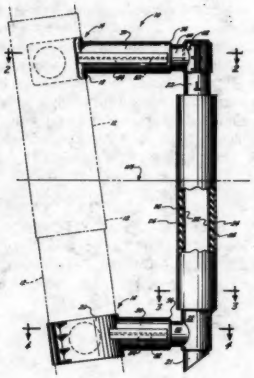
PRELOADED COMPRESSION ABSORBER CELL FOR BOAT BUMPERS

Weldon P. Taquino, 202 N. Locksley Dr., Lafayette, La. 70503

Filed Mar. 25, 1985, Ser. No. 715,649

Int. Cl.[4] B63B *59/02*

U.S. Cl. 114—219 **10 Claims**



1. A marine compression absorber for supporting bumpers on offshore platforms that can sustain impact from a moving marine vessel comprising:

a. a tubular base structural section having one end portion that is normally attached to an offshore oil platform and a central hollow bore;

b. a moving structural section that slides upon the base section in a telescoping fashion between inner retracted and outer projected positions;

c. first and second transverse load transfer surface means in the form of parallel plates carried respectively by the base and moving structural sections for transferring a compressive load between the base and structural sections;

d. a compressible rubber mass positioned between the first and second load transfer surfaces and surrounded by at least one of the structural sections, and an airspace which allows the rubber to laterally deform for biasing the moving section into the projected position;

e. tensioning means in the form of a tension rod forming a

connection between the first and second load transfer surfaces in the projected rest positon to put the rubber mass in compression by holding the first and second load transfer surface means in a position that squeezes the compressible rubber mass therebetween, for defining the projected rest position as a normal resting position prior to impact by a marine vessel so that the rubber mass can apply a compressive load to the load transfer surfaces prior to marine vessel impact; and

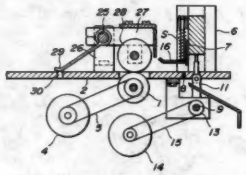
f. the tensioning means disconnecting from at least one of the load transfer surfaces when movement occurs to the retracted position.

4,607,587

TAPE MARKING AND CUTTING APPARATUS

Yoshiaki Houma, Tokyo, Japan, assignor to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 678,453
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—37 **4 Claims**



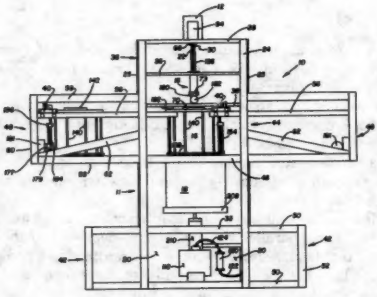
1. A tape marking and cutting apparatus comprising feed means for feeding tape, cutter means for cutting the tape, and marker means for marking on an upper side surface of the tape with a marker element, said marker means including marker actuator means for moving the marker element into abutting engagement with the upper side surface of the tape and for moving the marker element on the upper side surface of tape while maintaining the marker element in abutting engagement with the upper side surface of the tape to thereby form a mark on the upper side surface of the tape.

4,607,588

PARTS COATING APPARATUS AND METHOD

Richard O. Stants, 1508 Pontiac Dr., and Kerry J. Olds, 2719 N. Rockford Ct., both of Kokomo, Ind. 46902

Filed Apr. 4, 1984, Ser. No. 596,679
Int. Cl.[4] B05C *13/02*
U.S. Cl. 118—52 **37 Claims**



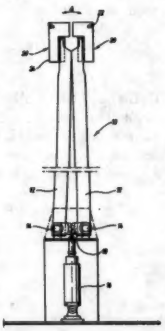
1. A parts coating apparatus comprising: a housing, a motor supported by said housing, a head driven by said motor, said head being rotatably mounted to said housing, at least one basket to contain parts to be coated, said basket being perforate to the coating material to be applied to said parts, each said basket being detachably coupleable to and rotatable with said head, a coating compartment, said coating compartment being capable of separably enclosing said basket when said basket is coupled to said head, said coating compartment being generally imperforate to said coating material, a spray tube communicating with said coating compartment to spray parts within said coating compartment with said coating material, said spray tube restraining said basket from radial movement of said basket during rotational movement thereof, a coating material supply system providing said coating material to said spray tube, a control system selectively actuating said motor and said coating material supply system.

4,607,589

FLUID DISPENSING APPARATUS

James D. M. Gibson, Ilkley, England, assignor to Wool Development International Ltd., Ilkley, England

Filed Aug. 29, 1984, Ser. No. 645,440
Claims priority, application United Kingdom, Sep. 1, 1983, 8323484; Oct. 10, 1983, 8327055
Int. Cl.[4] B05C *1/00*
U.S. Cl. 118—201 **9 Claims**



1. An apparatus for the application of crease setting compositions which comprise two movable arms movable towards and away from one another and capable of insertion into a leg of a pair of trousers to be creased, at least one of the arms carrying at, or near, one end thereof an applicator head comprising a nozzle for the application of crease setting composition, and guide means for locating the nozzle within the crease to be treated, there being means for urging crease setting composition through the nozzle into the crease to be set in timed relationship with the relative movement between the applicator heads and the trousers, said arms being movable towards one another to facilitate insertion into and removal from said trouser leg and being movable away from one another while inserted in the trouser leg so as to cause one of each arm to contact opposite creases of said trouser leg during the application of the crease setting composition.

4,607,590

APPARATUS FOR DIRECTING FLUID STREAM AGAINST SUBSTRATE SHEET

Don P. Pender, 1121 E. Wesleyan Dr., Tempe, Ariz. 85252

Continuation of Ser. No. 415,135, Sep. 7, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 651,442
Int. Cl.[4] B05C *5/02*
U.S. Cl. 118—314 **1 Claim**

1. Apparatus for directing a stream of fluid against a pliant substrate sheet traveling through said apparatus, said sheet having first and second opposed generally parallel planar

surfaces co-terminating at the edge defining the periphery of said sheet, said apparatus including:

(a) a conveyor table for transporting said pliant substrate sheet, said conveyor table including

(i) a plurality of generally horizontally disposed parallel axles carrying a first set of circular rollers contacting and supporting said first planar surface of said pliant substrate sheet in a generally horizontal orientation as said sheet moves over said rollers, and

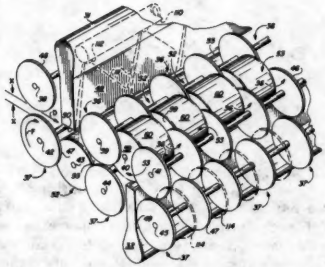
(ii) a plurality of generally parallel axles carrying a second set of rotating circular rollers generally opposed to said first set of rollers and contacting said second planar surface of said pliant substrate sheet as said sheet moves along said conveyor table, said axles carrying said second set of rollers being generally parallel to said axles carrying said first set of rollers,

said circular rollers carried on said axles being shaped and dimensioned such that said circular rollers carried on one of said axles overlap and are interproximated with rollers on another of said axles;

(b) a fluid force compensating roller rotatably carried in said apparatus and having a substantially continuous elongate cylindrical surface area positioned

(i) transverse said direction of travel of said sheet over said conveyor table; and

(ii) such that a portion thereof is adjacent said pliant substrate sheet as said sheet is transported by said conveyor table and moves over said fluid force compensating roller,



said fluid force compensating roller being shaped and dimensioned such that said circular rollers carried on at least one of said axles overlap and are interproximated with said fluid force compensating roller;

(c) drive means for turning

(i) said axles to rotate said circular rollers carried thereon to cause said sheet to move along said conveyor table in a direction of travel generally perpendicular to the longitudinal axes of said axles, and

(ii) said fluid force compensating roller; and

(d) fluid distribution means positioned to generally direct a stream of fluid

(i) toward said fluid force compensating roller, and p2 (ii) against said pliant substrate sheet to press one of said first and second planar surfaces thereof against a portion of said elongate cylindrical surface area,

said fluid stream generally initially contacting only portions of said pliant substrate sheet contacted and supported by said elongate cylindrical surface area of said fluid force compensating roller; and

the force generated by said fluid stream against said pliant substrate generally being counteracted by said portion of said elongate surface area of said fluid force compensatory roller,

said apparatus minimizing both the puddling of said fluid on said sheet and the tendency of said sheet to flutter during said directing of said fluid stream against said pliant sheet.

4,607,591

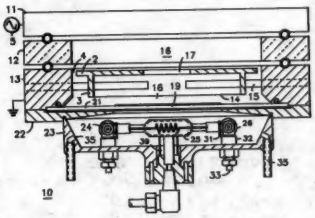
CVD HEATER CONTROL CIRCUIT

Robert W. Stitz, Mesa, Ariz., assignor to Spectrum CVD, Inc., Phoenix, Ariz.

Filed Aug. 6, 1985, Ser. No. 762,757

Int. Cl.⁴ B05C *11/00*

U.S. Cl. 118—666 **5 Claims**



1. Apparatus for chemical vapor deposition comprising:

an evacuable chamber having a thermally translucent window;

heater means positioned outside said chamber and adjacent said window, said heater means comprising at least one incandescent lamp;

temperature sensing means, located in said heater means, for producing an electrical signal indicative of temperature;

transducer means for converting the signal from said sensing means into a digital signal;

control means connected to said transducer means and to said at least one lamp for initially applying full power to said lamp and then a lower, temperature sustaining power to said lamp during a chemical vapor deposition process in said chamber.

4,607,592

PROCESS FOR THE RECYCLING OF PAINT MATERIAL FROM THE OVERSPRAY OCCURING DURING SPRAY PAINTING AND A DEVICE TO CARRY OUT THE PROCESS

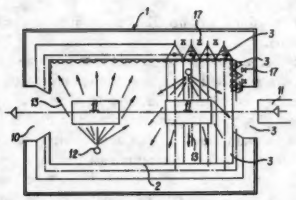
Wolfgang Richter, Augsburger Str. 23, D-8946 Memmingerberg, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 649,014

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 3332457

Int. Cl.⁴ B05B *15/06*

U.S. Cl. 118—689 **13 Claims**



1. A device to carry out a process to recycle paint from the overspray occuring in spray painting, comprising a collector device for collecting overspray which is flooded with water-circulating in a closed system, means for concentrating the water overspray mixture in a collection tank, a filtration chamber connected to the collection tank for separating the mixture

into water and raw paint, means for feeding the reclaimed water back into circulation, a measuring section (50) for measuring the physical characteristics of the reclaimed paint and comparing it to the physical characteristics of fresh paint, means for feeding the reclaimed paint to the measuring section, a reprocessing unit for adjusting the consistence of the raw paint according to the data determined in the measuring section, and means for mixing the thus reprocessed paint into the fresh paint to be sprayed, wherein the collector device (1) consists of wall surfaces which are made up of rotating segments, whereby the segments are completely flooded with circulating water.

4,607,593

APPARATUS FOR PROCESSING ARTICLES IN A CONTROLLED ENVIRONMENT

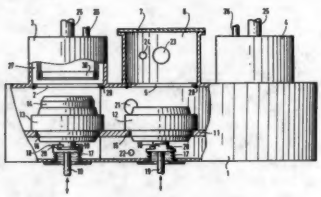
Gilbert O. E. Van Hemel, Weert, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1984, Ser. No. 679,330

Claims priority, application Netherlands, Dec. 23, 1983, 8304421

Int. Cl.[4] C23C *13/08*

U.S. Cl. 118—719 9 Claims



1. Apparatus for processing articles in controlled environments comprising

a tunnel whose wall is provided with an opening which gives access to a chamber which is connected to the tunnel in a vacuum-tight manner and in which a processing step can be carried out,

a conveyor present in the tunnel for transporting the articles through the tunnel, which conveyor has seats for receiving holders that can support the articles,

transport means by which the articles supported by a holder which is carried by the conveyor into a position opposite to the opening in the wall of the tunnel, can be introduced into the chamber and recovered from the chamber into the tunnel and

means by which a controlled environment can be created in the chamber,

characterized in that the tunnel is endless and the conveyor follows a closed path, the tunnel has in its wall several openings each giving access to a respective processing chamber which is connected to the tunnel in a vacuum-tight manner, and an opening giving access to a lock chamber which is connected to the tunnel in a vacuum-tight manner and in which articles can be locked through;

in that the apparatus can be sealed from its surroundings in a vacuum-tight manner by means of a panel in the outside wall of the lock chamber;

in that the chambers can be sealed from the tunnel in a vacuum-tight manner; and

in that the lock chamber, processing chambers and the tunnel each have means by which a controlled environment can be created therein.

4,607,594

ANIMAL LITTER

Craig E. Thacker, McConnelsville, Ohio, assignor to Raetec Industries, Inc., McConnelsville, Ohio

Filed Jan. 11, 1985, Ser. No. 690,723

Int. Cl.[4] A01K *1/015*

U.S. Cl. 119—1 15 Claims

10. A granular absorbent composition comprising a mixture of:

(a) absorbent particles selected from the group consisting of cellulosic material, a clay, a diatomaceous earth, and mixtures thereof; and

(b) inert adsorptive granules of volcanic rock, only said absorptive granules having been treated with a neutralizing agent capable of reacting with urine and selected from the group consisting of a carbonate, bicarbonate, hydrogen phosphate, and mixtures thereof.

4,607,595

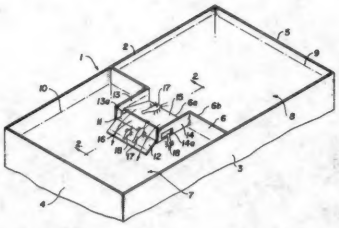
RHEOTACTIC SHRIMP HARVESTER

J. Carlos Busot, Land-o-Lakes, Fla., and Peter W. Hill, Wilmington, N.C., assignors to The University of South Florida, Tampa, Fla.

Filed Mar. 25, 1985, Ser. No. 716,227

Int. Cl.[4] A01K *61/00*

U.S. Cl. 119—2 16 Claims



1. A rheotactic shrimp harvester comprising, a first tank adjacent a second tank, ramp means extending between said tanks, slot means provided in said ramp means, water contained in said tanks, means supplying water to said second tank to maintain the water level in said second tank higher than the water level in said first tank, whereby the water flows from the second tank into said ramp means and into said first tank, and shrimp to be harvested being contained in said first tank, whereby the shrimp reacting to the current of water flowing down the ramp means migrate upstream on the ramp means, the smaller shrimp passing through the slot means and returning to said first tank while the larger shrimp go over the slot means and into said second tank.

4,607,596

MILKING METHODS AND APPARATUS

Walter G. Whittlestone, Riverlea Road; Douglas L. Wenham, 90 Braid Road, and James D. M. Foreman, 475 River Road, all of Hamilton, New Zealand

Filed May 11, 1984, Ser. No. 609,577

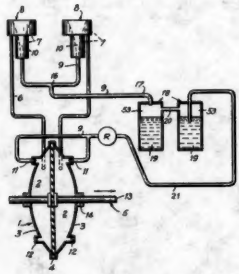
Claims priority, application New Zealand, May 11, 1983, 204193

Int. Cl.[4] A01J *5/04, 5/10*

U.S. Cl. 119—14.02 7 Claims

1. A method of milking using a pair of milking cups each having an outer pulsation chamber and an inner milk chamher, said method comprising the steps of causing the pulsation chambers of each of the milking cups to be directly communicable with separate chambers of a pump having at least two pumping chambers separated by a reciprocable member common to both and causing the milk chambers of the milking cups

to be communicable each with the two pumping chambers of the pump via a valving means operable to isolate the milk chambers of the milking cups when positive pressure exists in said pump chambers, and reciprocating the reciprocable member so that the vacuum created in the inner milk chambers of each milking cup is directly proportional to high pressure within the pulsation chambers of at least one of the milking cups.

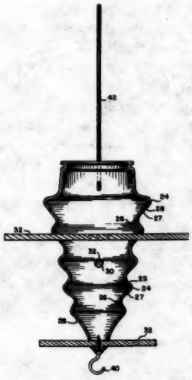


4,607,597

BIRD FEEDER

Charles P. Sevigny, 16 Barque Hill Dr., Norwell, Mass. 02061

Filed Apr. 24, 1985, Ser. No. 726,673
Int. Cl.[4] A01K *39/01*
U.S. Cl. 119—51 R 16 Claims



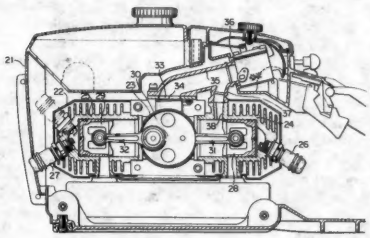
1. A bird feeder comprising:
(a) a bird feed container formed of a transparent material in the shape of an inverted cone and provided with a wide top opening and restricted bottom apex, and a plurality of progressively narrower undulations between said top opening and said bottom apex, each of said plurality of undulations defining a pair of reentrant annular sections: an upper section and a lower section disposed on opposed sides of a central ridge line, the inclination of said lower section being gentler than that of said upper section;
(b) at least one perch disposed diametrically across said container and extending on each side thereof;
(c) a plurality of feed apertures formed in one of said undulations located upwardly and adjacent said at least one perch and formed in said lower section thereof: and
(d) a removable cap designed for covering said wide top opening.

4,607,598

SUCTION DEVICE FOR TWO-CYLINDER INTERNAL COMBUSTION ENGINE

Yoshikiyo Kamata, Hachioji, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Dec. 12, 1984, Ser. No. 680,916
Claims priority, application Japan, Dec. 15, 1983, 58-192197[U]
Int. Cl.[4] F02B *75/24*
U.S. Cl. 123—56 BC 2 Claims



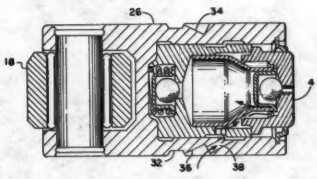
1. In a two-cylinder internal combustion engine comprising a pair of cylinders, a pair of pistons each mounted in one of said pair of cylinders for reciprocatory movement, a crankcase having a crankshaft connected to the two pistons, a variable volume crank chamber defined by the crankcase and an area formed beneath each of said pistons so as to perform precompression of air-fuel mixture, and a first conduit connected to a first suction port formed in the crankcase to maintain the crank chamber in communication with a carburetor via a check valve; a suction device comprising:
a second suction port in direct communication with the crank chamber formed at a wall of at least one of sid pair of cylinders and being open and closed by said piston; and
a second conduit allowing the second suction port to communicate with the carburetor therethrough.

4,607,599

ROLLER FOLLOWER HYDRAULIC TAPPET

Stephen M. Buente, and David P. Clark, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 15, 1985, Ser. No. 734,634
Int. Cl.[4] F01L *1/24*
U.S. Cl. 123—90.5 10 Claims



1. A hydraulic lash adjusting tappet for use in the valve gear of an internal combustion engine comprising:
(a) body means having the outer periphery thereof adapted for sliding movement in a bore provided in the engine, said bore of the type supplied by an oil passage communicating therewith;
(b) roller follower means rotatably received on one end of said body means, said roller follower means adapted for rolling contact with an engine camshaft;
(c) registration surface means adapted for moveable registration thereagainst comprising at least one especially config-

ured surface formed on said body means remote from said follower means and adapted for registration thereagainst for orienting said body means in said bore for ensuring proper alignment of said roller means with the engine camshaft;

(d) plunger means, including hydraulic lash adjusting means, said plunger means moveably received in a cavity formed in said body means, said plunger formed to interfit said cavity so as to form a hydraulic pressure chamber and define precision leakdown surfaces therebetween;

(e) said body means defining a fluid inlet port disposed on the periphery thereof for communicating with said engine bore oil passage when said body means is oriented in said bore by said registration means, said body means further defining a pair of localized collector surface means diametrically opposite thereon, said collector surface means disposed axially coincident with and circumferentially spaced from said registration surface means to provide a circumferentially staggered and on the periphery of said body means for leakage control between said body means and said engine oil bore one of said surface means disposed to communicate with said fluid inlet port, said collector surface means further including passage means operable to maintain communication of said engine bore oil passage with said fluid inlet port during movement of said body means in said engine bore caused by contact of said roller means with said engine camshaft.

4,607,600

VALVE ACTUATING APPARATUS IN INTERNAL COMBUSTION ENGINE

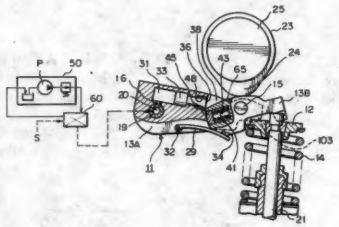
Kouji Yoshizaki, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 24, 1985, Ser. No. 779,678

Claims priority, application Japan, Dec. 25, 1984, 59-195438[U]; Jan. 11, 1985, 60-1480[U]; Jan. 24, 1985, 60-7303[U]

Int. Cl.[4] F02D *13/06*

U.S. Cl. 123—90.16 **4 Claims**



1. A valve actuating apparatus for intake and exhaust valves in an internal combustion engine having a swing rocker arm which is rotatably connected at its one end to a rocker arm shaft supporting the rocker arm and at its opposite end bears against a valve stem of an associated intake or exhaust valve, and a rotatable cam which is supported on a cam shaft and which bears against the rocker arm to swing the same about the rocker arm shaft, wherein said rocker arm is composed of two arms which are interconnected to each other by means of a connecting shaft extending in parallel to the rocker arm shaft for relative rotation about the connecting shaft, one of which arms bears against the valve stem, so that the two arms can selectively occupy an operative position in which the two arms are integral with each other and extend substantially straight so as to form a single rocker arm, and an inoperative position in which a relative rotation between the two arms takes place to absorb the rotation of the cam, and wherein said apparatus comprises means for causing the cam to bear only against said one arm bearing against the valve stem.

4,607,601

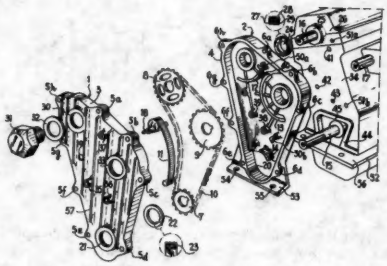
DETACHABLE TIMING GEAR CASSETTE UNIT FOR AN EXPLOSION OR INTERNAL COMBUSTION ENGINE

Bernard Kohler, La Celle St-Cloud, France, assignor to Compagnie des Transmissions Mechaniques Sedis, France

Continuation-in-part of Ser. No. 582,739, Feb. 23, 1984, abandoned. This application Feb. 22, 1985, Ser. No. 704,194

Int. Cl.[4] F01L *1/02*

U.S. Cl. 123—90.31 **14 Claims**



1. A detachable timing gear cassette unit for attaching to a crankshaft and a camshaft of a cylinder block of an engine, said timing gear cassette unit comprising:

a housing formed by at least two sealingly interconnected side walls, said housing, including said at least two interconnected side walls, being attachable and detachable as a unit from said cylinder block; and

synchronization means disposed within said housing, said synchronization means comprising:

first means for producing an input movement for connection to said crankshaft;

at least one second means for producing an output movement for connection to said camshaft;

third means interconnecting said first and at least one second means, said first, at least one second, and third means being prepositioned and communicating such that said third means drivingly connects said first means to said at least one second means whereby said output movement is driven in synchronism with said input movement; and

positioning means located adjacent said first and at least one second means for maintaining said first means and said at least one second means in position during attachment of said timing gear cassette unit to said cylinder block.

4,607,602

IGNITION TIMING CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Satoshi Komurasaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,652

Claims priority, application Japan, Sep. 16, 1983, 58-171469; Oct. 26, 1983, 58-202084; Oct. 31, 1983, 58-206468

Int. Cl.[4] F02P *5/155*

U.S. Cl. 123—425 **20 Claims**

1. An ignition timing control apparatus for an internal combustion engine including a supercharger having an operating characteristic such that the supercharging pressure rises with increasing engine spped to a supercharged pressure limit and thereafter remains generally constant with increasing engine speed, said ignition timing control apparatus comprising:

an acceleration sensor for detecting the vibrating acceleration of the internal combustion engine;

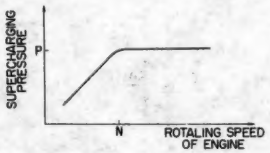
discriminating means for removing a noise signal component

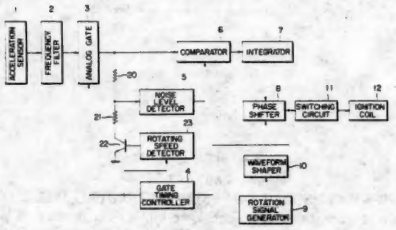
from the output of said acceleration sensor to discriminate a knocking signal component;

generation means for generating reference ignition timing signals;

phase shift means for phase-shifting the phase of said reference ignition timing signals in response to the output of said discriminating means;

switch means for switching the energization of an ignition coil in response to the output of said phase shift means;





detector means coupled to the engine for monitoring a load condition indicative of the operating characteristic of the supercharger and generating a first signal in the rising portion of the supercharger operating characteristic and a second signal in the constant portion of the supercharger operating characteristic; and

control means for controlling the phase shift variable of said reference ignition timing signals in response to the signals generated by said detector means.

4,607,603

FUEL INJECTION SYSTEM EMPLOYING THE SECOND TIME DIFFERENTIAL OF PRESSURE OR AIR FLOW RATE

Nobuyuki Kobayashi; Toshimitsu Ito, and Kazuhiko Norota, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 464,111, Feb. 4, 1983, abandoned. This application Nov. 8, 1984, Ser. No. 669,723

Claims priority, application Japan, Mar. 31, 1982, 57-149937

Int. Cl.[4] F02B *3/00*

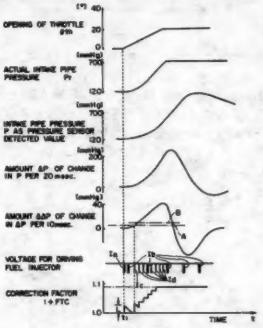
U.S. Cl. 123—492 **6 Claims**

1. An electronically controlled fuel injection system to inject fuel from a fuel injector to an intake system having an intake pipe pressure and an air flow rate comprising:

means for detecting a quantity X equal to one of said intake pipe pressure and an air flow rate with respect to time;

means for determining a basic fuel injection amount as a function of X;

means for detecting a second differential d^2X/dt^2 of X with respect to time; and


OPENING OF THROTTLE
ACTUAL INTAKE PIPE PRESSURE
INTAKE PIPE PRESSURE P AS PRESSURE SENSOR DETECTED VALUE
AMOUNT ΔP OF CHANGE IN P PER 20 msec.
AMOUNT Δ²P OF CHANGE IN ΔP PER 10msec.
VOLTAGE FOR DRIVING FUEL INJECTOR
CORRECTION FACTOR 1+FTC
TIME

means for increasing synchronous fuel injection in relation to said second differential.

4,607,604

OIL SEPARATOR FOR INTERNAL COMBUSTION ENGINE

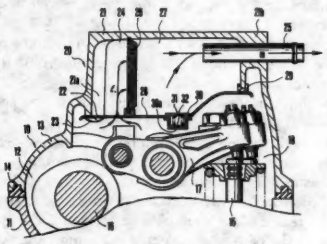
Junichi Kanoh, Nagoya, and Kongoh Aoki, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kiraya, Japan

Filed Feb. 27, 1985, Ser. No. 706,446

Claims priority, application Japan, Mar. 5, 1984, 59-031908[U]

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—572 **3 Claims**



1. In an internal combustion engine including a crankcase ventilation system, an oil separator casing formed integrally with the cylinder-head over, a partition defining the lower end of the oil separator, a baffle member for intercepting oil drops contained in blow-by gas flowing into the oil separator from the upper chamber of the cylinder, and an outlet port formed in the wall of said oil separator casing to exhaust gas from the oil separator, wherein the improvement comprises:

said baffle member being arranged at the open lower end of the oil separator,

a filter member made of foam metal and arranged so as to divide the inside of the oil separator into a gas-liquid separating chamber in the upperstream side where said baffle member is arranged and a downstream side chamber where said partition is arranged, said filter member functioning so as to absorb oil constituents contained in blow-by gas passing through said baffle member,

a relief valve being arranged in said partition so as to be opened when the internal pressure of said upper chamber of the cylinder increases to a predetermined degree, to introduce the blow-by gas into said downstream-side

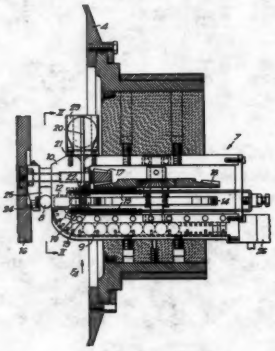
chamber directly from said upper chamber of the cylinder.

4,607,605

PROJECTILE DISTRIBUTOR FOR CENTRIFUGAL LAUNCHER

Léon L. Rutten, 20 Rue Duvivier, 4000 Liege, Belgium

Filed Jan. 14, 1983, Ser. No. 457,963
Claims priority, application Belgium, Jan. 22, 1982, 2/59552
Int. Cl.⁴ F41B *3/04*
U.S. Cl. 124—6 **10 Claims**



1. A distributor for feeding oblong projectiles to the path of a projectile engaging vane carried by a cylindrical gun in a centrifugal launcher of the type including a rotor having an open central zone, and wherein the rotor axis of rotation and longitudinal axis of the gun define two skewed lines, the distributor comprising:

(a) a support provided with a transfer zone and a passage for storing a plurality of oblong projectiles to be fed into the transfer zone;

(b) a slide disposed in the transfer zone for successively engaging the oblong projectiles;

(c) an anvil carried by the support and positioned opposite the slide in an open central zone of a rotor;

(d) means for periodically advancing the slide to a first position in synchronization with rotation of the rotor to engage and bring each oblong projectile against the anvil and in the path of a projectile engaging vane, wherein the slide blocks the passage while in the first position;

(e) means for retracting the slide to a second position wherein the slide unblocks the passage;

(f) means for maintaining the slide in the first position in opposition to the retraction means, including a movable knife biased towards a locking position in engagement with the slide and electromagnet means for moving the knife into an unlocking position out of engagement with the slide; and

(g) means for feeding the oblong projectiles through the passage to the transfer zone.

4,607,606

BOW MOUNTED QUIVER

John Schaar, Tempe, Ariz., assignor to Grand Slam Archery, Phoenix, Ariz.

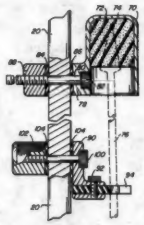
Filed Aug. 26, 1983, Ser. No. 526,661
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—89 **18 Claims**

1. A quiver mountable on a bow, comprising:

storage means capable of releasably housing at least one arrow;

coupling means adopted to attach for attaching said storage means to a first side of said bow; and

counterweight means mounted on said coupling means and



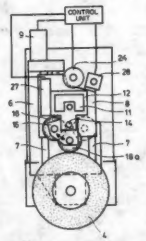
adapted to extend extending from a second side of said bow to produce a compensating torque which substantially offsets the torque produced by the weight of said storage means and said at least one arrow.

4,607,607

APPARATUS FOR DRESSING GRINDING WHEELS

Reinhard Janutta, Geesthacht; Uwe Uhlig, Buchholz, and Werner Redeker, Börnsen, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 651,070
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334663
Int. Cl.⁴ B24B *53/00*
U.S. Cl. 125—11 CD **15 Claims**



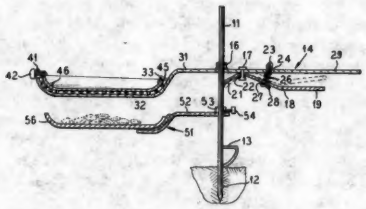
1. In a grinding machine, the combination of a housing; a holder reciprocably mounted in said housing; a grinding wheel having a working surface and being rotatably mounted on said holder; and a numerically controlled dressing apparatus comprising a carrier movably mounted on said support, a plurality of rotary spindles of said carrier, at least one dressing tool on each of said spindles, at least one of said tools having a circumferentially complete marginal portion resembling a cutting edge and said carrier being pivotable about an axis which is at least substantially parallel to the axis of at least one of said dressing tools between a plurality of different angular positions in each of which a different tool is ready for engagement with said working surface, drive means for rotating said tools relative to said carrier, and means for effecting a movement between said carrier and said grinding wheel in the axial and radial directions of the grinding wheel.

4,607,608

CAMPFIRE COOKING GRILL

Von D. Allred, and Mark Allred, both of P.O. Box 24, Afton, Wyo. 83110

Filed May 31, 1985, Ser. No. 739,850
Int. Cl.[4] F24B 3/00
U.S. Cl. 126—30 3 Claims



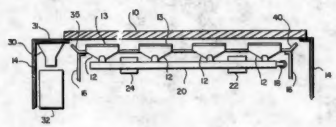
1. An outdoor cooking grill comprising a stake with a foot pad adapted to be inserted into the ground with the foot pad, a combination griddle and grill member including a support member formed with an opening receivable over said stake and with a first end which forms a handle, a grill attached to the other end of said support member, a transverse angle member attached to said support member adjacent said grill, a griddle attachable to said support with said angle, a handle locking lever pivotally attached to said support member and engageable with said stake and spring biased to a locked position and moveable to allow said support member to be moved vertically on said stake and wherein said grill is curved and said griddle has a similar curve so that it can be mounted on said grill and locking means to lock said grill to said griddle.

4,607,609

INFRARED BURNER ASSEMBLY FOR A GRIDDLE

Richard Keating, 330 Sutton Rd., Barrington Hills, Ill. 60010

Filed Oct. 2, 1985, Ser. No. 783,169
Int. Cl.[4] F24C 3/00
U.S. Cl. 126—39 J 4 Claims



1. A griddle comprising:

A metal slab having a generally rectangular shaped surface adapted for cooking foods thereon;

support cabinet means for said slab;

infrared burner means located below said slab in close proximity thereto for heating said surface to a uniform cooking temperature, said infrared burner means forming a radiant array having a surface area substantially equal to the area of said rectangular shaped surface and having exterior sides that are inwardly disposed from the edges of said slab; and

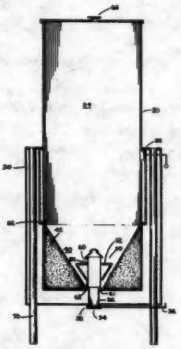
deflector means mounted adjacent to said inwardly disposed sides of said infrared burner means and extending outwardly substantially to the edges of said slab.

4,607,610

DOWNDRAFT STOVE WITH TUBULAR GRATING

Hans G. Zimmermann, 1844 Southmount, St. Bruno de Montarville, Quebec, Canada (J3V 4N3)

Filed Sep. 30, 1985, Ser. No. 781,463
Int. Cl.[4] F24B 5/04
U.S. Cl. 126—76 11 Claims



1. In a downdraft stove, a tubular grating assembly for positioning in a reaction chamber, comprising:

a substantially vertically oriented central tube open at its upper end and connected at its lower end to an air inlet opening;

a cap supported above said open upper end for protecting said open upper end from entry of matter, the space between said cap and said upper end constituting a primary air inlet nozzle;

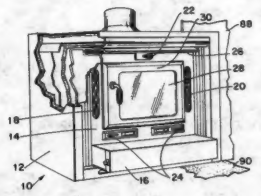
a plurality of grating tubes radially distributed around and taking off substantially horizontally from and communicating with said central tube, thereby defining a grating, and thence turning downwardly and being open at their downward ends to thereby constitute secondary air inlets.

4,607,611

SOLID FUEL HEATING DEVICE

James S. Rice, Marshall; Barry Eavenson; Garry Eavenson, both of Asheville, and Thomas A. Bryson, Horseshoe, all of N.C., assignors to Appalachian Stove and Fabricators, Inc., Asheville, N.C.

Filed Aug. 9, 1984, Ser. No. 639,236
Int. Cl.[4] F24B 7/00
U.S. Cl. 126—121 28 Claims



1. A heating device comprising:

a forced air stove adapted to burn solid fuel; said stove being at least partially made of a double-wall construction forming an air space so that air may be forced along the hot portions of said stove;

a metal box defining a partial parallelepiped shaped enclosure, the front of said box being open for receiving said stove, with the front of said stove substantially filling the

front open space of said box; the top of said box having a hole therein for venting smoke and gases from said stove;

a layer of thermal insulation attached to and covering substantially the entire inside surface of said box;

said stove being removably positioned within said box so as to leave a second air space at least between the thermal insulation on the respective side, top and rear walls of said box, and the outer side, top and rear walls of the stove, there being no substantial heat conducting connecting elements between said insulation and said walls of the stove.

4,607,612

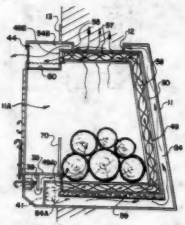
FIREPLACE FURNACE

Joseph DeRisi, Box 87D, Rte. 1, Casar, N.C. 28020

Filed May 23, 1985, Ser. No. 737,274

Int. Cl.[4] F24B *7/00*

U.S. Cl. 126—121 **10 Claims**



1. A furnace insert for an enclosed fireplace having an open front and a chimney, said furnace insert comprising:

a. a generally box-shaped sheet metal outer housing positioned within the fireplace and extending outwardly from within the fireplace and lapping the surrounding fireplace walls, said housing having bottom, top, rear and opposing side walls;

b. a generally box-shaped sheet metal inner housing defining a firebox, said inner housing positioned within said outer housing and having bottom, top, rear and opposing side walls in spaced-apart relation to the corresponding walls of said outer housing to define a heat exchange chamber therebetween;

c. a heat exchange chamber air inlet between the bottom wall of the outer housing and the bottom wall of the inner housing for admitting air to said heat exchange chamber for heating;

d. a heat exchanger air outlet between the top wall of the outer housing and the top wall of the inner housing for permitting air which has entered said heat exchanger chamber through said inlet and has been heated within said heat exchange chamber to exit said heat exchange chamber into the area to be heated;

e. a flue formed in the top of said furnace insert through the top walls of said first and second housing walls and sealed against air flow communication with said heat exchange chamber to permit combustion gases to exit said furnace insert through the fireplace chimney; and

f. an array of generally U-shaped tubular ducts positioned in spaced-apart relation within said inner housing and said firebox to absorb heat, each of said tubular ducts defining a lower air inlet and an upper air outlet for permitting air to enter the ducts, absorb heat and exit the ducts into the area to be heated, at least some of said ducts being positioned directly under said flue to absorb heat which would otherwise exit the furnace through said flue;

g. a conduit positioned with one end inside said firebox and the other end outside said firebox in combustion air flow relation to said firebox;

h. an elongate control rod extending through said conduit from one end to the other end and having a handle on the end of the control rod on the outside end of said conduit for manual manipulation;

i. a plate secured to the inside end of said control rod for selective movement between a range of positions wherein at one extreme position with the control rod pushed inwardly towards the firebox, said plate is positioned in spaced-apart relation from the end of the conduit to permit combustion air to flow into the firebox and, wherein, at the other extreme position said plate is positioned in mating contact with the inside end of the conduit to restrict the flow of combustion air into the firebox; and

j. a damper cover positioned within said firebox on top of and in front of said conduit in spaced-apart relation thereto to direct the flow of combustion air to the sides of said conduit and to opposite sides of said firebox for even distribution of combustion air to the fuel and, to prevent the accumulation of ashes within close proximity of said conduit in order to prevent restriction of the flow of combustion air therethrough;

whereby the efficiency of the furnace is increased by increasing the maximum possible air flow, the fireplace walls are protected against excessive heat by an insulating effect created by said heat exchange chamber and heat is distributed evenly around the walls of the furnace for passage into the area to be heated.

4,607,613

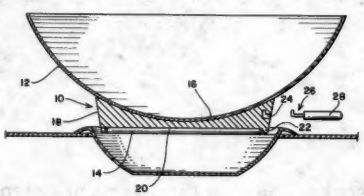
WOK ADAPTER

George Toldi, 2775 Glorietta Cir., Santa Clara, Calif. 95051

Filed Jul. 19, 1984, Ser. No. 632,296

Int. Cl.[4] A47J *36/34;* B65D *25/28;* F24C *15/26, 15/34*

U.S. Cl. 126—215 **4 Claims**



1. A wok interface adapter for supporting a wok cooking vessel of the type comprising a curvilinear metallic shell, and further for conductively transferring thermal energy from a range top cooking element to the wok while providing a thermal energy reservoir therefor, comprising:

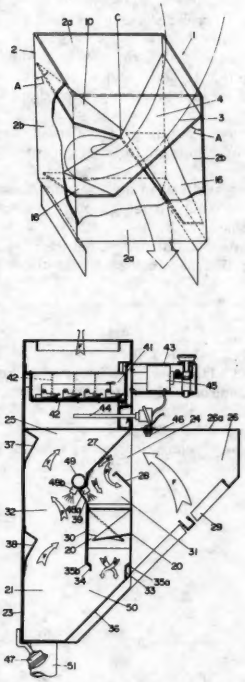
an adapter solid formed in the general shape of the frustum of a cone, including an upper wok receiving surface adapted to have a shape complementary to the lower central exterior surface of the wok, such that the wok rests thereon in a stable manner, a planar lower surface adapted to rest in a stable manner upon the range top cooking element, an inclined circumferential conical side surface having an increasing diameter from the lower surface to the top surface and having a handle attachment detent formed therein at a location intermediate the upper surface and the lower surface, and a solid body portion enclosed by the upper surface, the lower surface and the circumferential surface, the body portion being thermally conductive in nature so as to facilitate thermal energy transfer from the range top cooking element to the wok while having the property of partially retaining thermal energy therein when the wok is removed from the upper surface; and

a handle element adapted to detachably mate with said handle attachment detent such that the adapter solid may be transported thereby.

4,607,614
GREASE EXTRACTOR

Toshihiro Higashino; Hirofumi Mitsunaga; Takahiro Nakanishi, all of Osaka, and Yoshihiro Taya, Sakai, all of Japan, assignors to Kuraco Limited, Osaka, Japan

Filed Jul. 31, 1984, Ser. No. 636,476
Claims priority, application Japan, Aug. 4, 1983, 58-143522
Int. Cl.[4] F24C *15/20*
U.S. Cl. 126—299 E 7 Claims



1. A grease extractor for use in a forced air ventilating system which comprises:

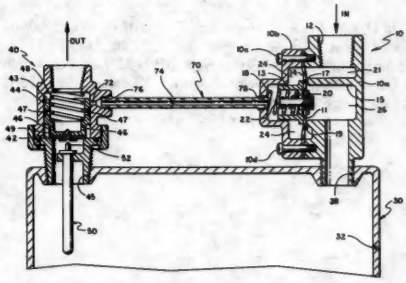
a barrel having a longitudinal axis;

a pair of oblique baffles disposed within the barrel said baffles comprising opposed side and opposed end walls and having square cross section, each oblique baffle being a substantialiy flat plate with upper and lower straight edges, a straight side edge and a notched side edge, the upper and lower edges of each oblique baffle being in intimate engagement with the inner surfaces of the respective opposed end walls, the straight side edge of each oblique baffle being in intimate engagement with the inner surface of each of the opposed side walls, and the apex of the notched side edge of one oblique baffle being crossed with that of the other oblique baffle at the longitudinal axis in such a manner that the baffles are angularly displaced with one another and that the upper half of one oblique baffle overlies but is spaced from the lower half of the other oblique baffle whereby to provide within the confines of the barrel a pair of congruent flow paths extending downwardly and spirally about the longitudinal axis, said flow paths having respective inlets at the upper end of the barrel which are angularly spaced about the longitudinal axis and having respective outlets at the lower end of the barrel which are angularly spaced about the longitudinal axis, said inlets being formed respectively between the upper notched edge of one baffle and the upper surface of the other baffle, and said outlet being formed respectively between the lower notched edge of one baffle and the lower surface of the other baffle.

4,607,615
AUTOMATIC CONTROL SYSTEM FOR WATER HEATERS

Wayne S. Boals, P.O. Box 1289, Blue Jay, Calif. 92317

Filed Mar. 28, 1985, Ser. No. 717,366
Int. Cl.[4] F24H *1/00*
U.S. Cl. 126—362 16 Claims



1. A fluid system coupled to a source of fluid under pressure and a storage tank, comprising:

a delivery system which said storage tank provides fluid to;

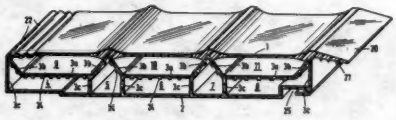
control valve means connected between said fluid source and said storage tank for allowing the passage of fluid from said fluid source system to said storage tank when in an open position and preventing the passage of fluid from said fluid source to said storage tank when in a closed position; and

said control valve means including means for sensing the pressure differential between the pressure at said fluid souce and the pressure at said delivery system, the sensing means moving said control valve means from said closed position to said open position when the fluid source pressure is greater than the delivery system pressure.

4,607,616
ROOF CLADDING OR SIMILAR BUILDING ELEMENT ALLOWING HEAT EXCHANGE WITH THE ENVIRONMENT AND USABLE PARTICULARLY AS A SOLAR ENERGY COLLECTOR

Klaus Lehmann, Königstrasse 42, Duisburg, Fed. Rep. of Germany

PCT No. PCT/DE83/00011, § 371 Date Oct. 14, 1983, § 102(e) Date Oct. 14, 1983, PCT Pub. No. WO83/02819, PCT Pub. Date Aug. 18, 1983
PCT Filed Jan. 26, 1983, Ser. No. 548,853
Claims priority, application Spain, Feb. 16, 1982, 509 637
Int. Cl.[4] F24J *2/24*
U.S. Cl. 126—445 9 Claims



1. A roof covering heat exchange constructional element in

which a first tier of hollow chambers form a cover layer with wall ridges that connect to the lower side of the cover layer and are alternately slanted and converge at the cover layer, a second tier of hollow chambers which are selectively interpersed with selected chambers of the first tier and the junctions of the interpersed chambers form wall ridges which have approximately the cross section of back-to-back concave lenses, characterized as follows:

between the converging wall ridges and the associated wall ridges of the next tier, further channel-like hollow chambers are formed which extend over both tiers.

4,607,617

APPARATUS AND METHOD FOR IMPROVING EYESIGHT

David P. Choyce, 9 Drake Road, Westcliff on Sea, England

Continuation-in-part of Ser. No. 287,628, Jul. 28, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 419,902

Claims priority, application United Kingdom, Aug. 5, 1980, 8025426; May 11, 1981, 8114325

Int. Cl.[4] A61B *19/00*; A61F *17/32, 2/14*

U.S. Cl. 128—1 R **7 Claims**

1. A corneal inlay lens for implant between layers of a cornea of an eye comprising of a polysulfone material of a high refractive index and permeable to body fluids and of a thickness in the range of 0.1 mm to 0.4 mm for insertion between layers of the cornea to correct defects in eyesight.

2. A method of treatment for correcting eyesight defects, which comprises:

a. forming an incision in the outer layer of the cornea;

b. separating layers of the cornea to form a pocket;

c. inserting into the pocket a lens inlay of polysulfone material; and,

d. resealing the incision.

4,607,618

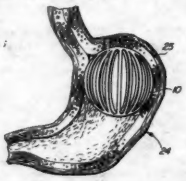
METHOD FOR TREATMENT OF MORBID OBESITY

Jean P. Angelchik, 1728 W. Glendale Ave., Phoenix, Ariz. 85021

Division of Ser. No. 469,095, Feb. 23, 1983, abandoned. This application Jan. 11, 1985, Ser. No. 690,852

Int. Cl.[4] A61B *17/00*

U.S. Cl. 128—1 R **1 Claim**



1. In a method for treating morbid obesity, including the step of implacing a shaped device in the stomach, the improvement comprising:

(a) providing a collapsible, hollow, shaped device, said device

(i) being normally shaped and dimensioned to be received and retained within the fundus without deforming the stomach walls beyond its normal shape and dimensions,

(ii) being formed of a semi-rigid skeleton which is collapsible by the application of external force to deform said device to a shape and cross-sectional dimension which is insertable into the stomach through the esophagus and the cardiac opening,

(iii) being capable of autogenously reassuming and retaining said normal shape when such collapsing external force is removed;

(b) collapsing said semi-rigid skeleton device by applying such external force to said shape and cross-sectional dimensions for insertion through the esophagus and cardiac opening;

(c) per-orally inserting said collapsed structure into the fundus of the stomach through the esophagus and cardiac opening;

(d) releasing said collapsing force to cause said collapsed skeleton structure to autogenously reassume and retain its normal shape; and

(e) maintaining said device within the stomach for a length of time sufficient to cause a substantial weight loss by the patient.

4,607,619

LOCKING MECHANISM FOR AN ENDOSCOPE

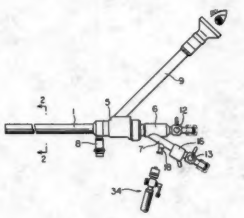
Noboru Seike; Masatoshi Teranishi, and Minoru Sakai, all of Hokkaido, Japan, assignors to Snow Brand Milk Products, Co., Ltd., Sapporo, Japan

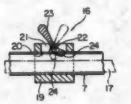
Filed Feb. 26, 1985, Ser. No. 705,761

Claims priority, application Japan, Feb. 28, 1984, 59-36848

Int. Cl.[4] A61B *1/00*

U.S. Cl. 128—4 **2 Claims**





1. In an endoscope comprising an endoscopic pipe having a manipulating terminal thereon, said manipulating terminal having mounted thereon an eyepiece member, a light-guide mounting member, an instrument insertion member and a handling forceps insertion member, the improvement which comprises:

said handling forceps insertion member has a gas injection member and a locking mechanism mounted thereon, said locking mechanism being adapted for locking a handling forceps in position, said locking mechanism comprising a casing through which extends said handling forceps insertion member, said casing and said handling forceps insertion member having slits in corresponding portions thereof which slits communicate with each other, a lever and pivot means mounting the middle portion of said lever

on said casing between the sidewalls of the slit thereof, so that said lever can be pivoted into said handling forceps insertion member, said lever having a front end portion which is adapted to lock in position a handling forceps which has been inserted in said handling forceps insertion member.

4,607,620

MEDICAL GRIPPING INSTRUMENT

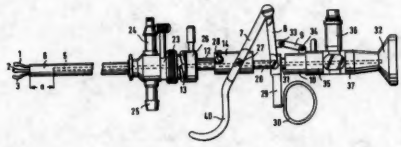
Karl Storz, Auf Den Schildrain 39, Tuttlingen, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,372

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 6803342[U]

Int. Cl.[4] A61B *17/28*

U.S. Cl. 128—4 2 Claims



1. A medical gripping instrument for gripping objects at the distal end of an endoscopy shaft, said shaft having an axis and also having a fixed outer sleeve with a passage opening at said distal end, said instrument comprising:

a periscope disposed on said axis, and axially movable in said shaft;

at least three springy gripping arms axially movable in said shaft and having distal ends thereby coaxially arranged around said axis, and adapted to extend beyond the distal end of the shaft and extend laterally beyond it, whereby to open to receive an object, and to be closed on the object and when drawn into the shaft by contact with the distal end thereby to hold and draw the object toward said shaft, said gripping arms being arranged concentrically around said axis, and leaving a clear path between them along which the periscope can see, said periscope and arms being interlinked so that both move in the same axial direction simultaneously, whereby the region within the arms is in the view of the periscope, and an object brought into the shaft by the arms will not harmfully contact the periscope.

4,607,621

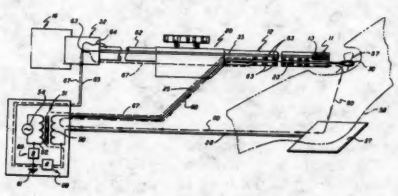
ENDOSCOPIC APPARATUS

Robert C. Wheeler, Skaneateles, N.Y., assignor to Welch Allyn Inc., Skaneateles Falls, N.Y.

Filed Oct. 7, 1983, Ser. No. 539,947

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—6 7 Claims



1. A video-equipped endoscope for performing diathermic treatment in the viewing region of the instrument, said endoscope having an image sensor mounted in the distal end of an insertion tube that is connected to a remote video processor by video lead means passing through the insertion tube, and a diathermic lead also passing through the insertion tube that is connected to a high frequency R.F. electro-surgical generator, the improvement comprising

video ground means for placing video related components at a video ground reference potential,

R.F. ground means for placig the electro-surgical generator at an R.F. ground reference potential,

a conductive shield mounted inside the insertion tube for enclosing the video image sensor and the video lead means,

first means for connecting the shield to the video ground means, and

second means for connecting the shiled to the R.F. ground means whereby electrical energy coupled to the shield is returned to the appropriate ground reference.

4,607,622

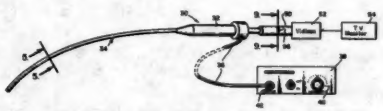
FIBER OPTIC OCULAR ENDOSCOPE

Charles D. Fritch, Rte. 11, Box 239B, Bakersfield, Calif. 93308, and John B. McAdams, Santa Monica, Calif., assignors to Charles D. Fritch, Bakersfield, Calif.

Filed Apr. 11, 1985, Ser. No. 722,839

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—6 15 Claims



1. An ocular endoscope comprising:

a first bundle of fiber optics adapted to be connected to a light source at one end for conducting and projecting light to selected areas at the other end,

a second bundle of fiber optics coaxial with said first bundle and adapted to be connected to a display device at one end and a lens at the other end for viewing said areas illuminated by said first bundle, and

a semi-rigid malleable flexible sheath encompassing said first bundle and said second bundle, said sheath, said first bundle and said second bundle of fiber optics having a cross-section approximating that of an ellipse whereby insertion of the probe is facilitated by conforming to the shape of the incision and risk of infection is minimized.

4,607,623

UNITARY INSERT SUPPORT FRAME FOR THE HANDLE OF AN EXAMINING DEVICE

Jack Bauman, 1677 San Onofre Dr., Pacific Palisades, Calif. 90272

Filed Nov. 8, 1984, Ser. No. 669,473

Int. Cl.[4] A61B *1/26*

U.S. Cl. 128—11 12 Claims

1. A light generation device to facilitate observation of a field of view comprising:

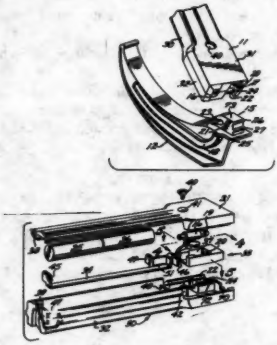
a. an elongated, hollow housing having an interior chamber with a first opening for discharging light and a second opening to accomodate a projecting element which activates a light switch;

b. a unitary support frame having a battery section adapted to hold one or more batteries, a light section having a reflector, a light bulb disposed within the reflector and in optical communication with the first opening, and a light switch which is activated by means of an activating element projecting through the second opening, and means to secure the unitary support frame within the interior of the housing; and

c. electrical conducting means integral with the unitary support frame and in electrical contact with the one or

more batteries held in the battery section, the light bulb and the light switch to pass electrical current therebetween when the light switch is activated.

7. An examining device comprising a handle which incorporates the light generation device of claim 1, a blade, means to detachably secure the blade to the handle in a generally L-



shaped configuration, the light bulb in the handle optically coupled to a light conductor associated with the blade to direct light from the light bulb through the light conductor to a field of view and

the reflector formed integral with the support frame to reflect light from the light bulb to the light conductor associated with the blade.

4,607,624

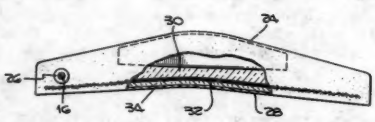
HEATING PAD AND MASSAGER

Valerie Jefferson, 6639 Brampton Ave., Rialto, Calif. 92376

Filed Aug. 7, 1985, Ser. No. 763,202

Int. Cl.[4] A61H *21/00*

U.S. Cl. 128—24.2 **4 Claims**



1. In a heating pad and massager, the combination which comprises:

an adjustable electrically activated vibrating massage unit;

means for adjusting said vibrating massage unit;

an adjustable electrically activated heating element;

means for adjusting said heating element;

an electric source power cable for furnishing electric power to said vibrating massage unit and to said heating element;

an electric junction box for connecting said electric source power cable to said vibrating massage unit and to said heating element;

a pliant, outer covering envelope that encloses said vibrating massage unit and said heating element and provides support for said junction box;

a protective electrical insulating envelope situated within said pliant, outer covering envelope and enclosing said vibrating massage unit and said heating element; and

a layer of thermal insulating material situated between said vibrating massage unit and said heating element.

4,607,625

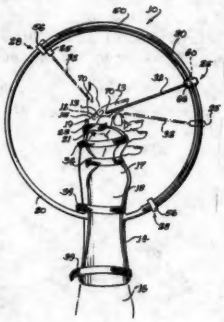
DYNAMIC TRACTION DEVICE

Robert R. Schenck, 1100 N. Lake Shore Dr., Chicago, Ill. 60611

Filed Jan. 10, 1985, Ser. No. 690,461

Int. Cl.[4] A61H *1/02*

U.S. Cl. 128—26 **18 Claims**



1. A portable hand mounted device for exercising a finger under traction comprising:

a support means attachable to the hand of the patient and adapted to be carried about by the patient,

means for attachment to the finger and for exerting a traction force on the finger, and

drive means including a drive motor on said support means and connecting means operatively associated with and connected to said means for attachment to move the latter and the attached finger first in one direction to flex and extend the finger as it heals under traction and then in the other direction to bend and close the finger to pressure joint tissue during healing.

4,607,626

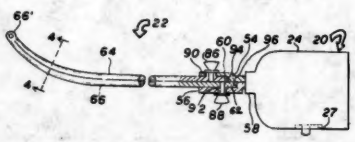
EXPANDABLE URETHRAL BOUGIE COMPRISING BENDABLE RODS WITH RECIPROCATING DRIVER

German Borodulin, 2518 Clement St. #4, San Francisco, Calif. 94121; Maxim Persidsky, 35 Temescal St., San Francisco, Calif. 94118, and Alexander Shkolnik, 4434 Fulton St. #2, San Francisco, Calif. 94121

Continuation-in-part of Ser. No. 621,842, Jun. 18, 1984, abandoned. This application Sep. 23, 1985, Ser. No. 778,760

Int. Cl.[4] A61H *1/00*

U.S. Cl. 128—43 **12 Claims**



1. A mechanically-expandable bougie comprising:

a driving means,

elongated radially-expandable probe means comprising a pair of adjacent, elongated members attached to said driving means,

said driving means having two output elements and being arranged to cause said output elements to reciprocate in mutually-opposite directions,

said probe means being arranged to convert the reciprocating motions of said output elements of said driving means into expansions and contractions of said pair of elongated members, said elongated members comprising a pair of

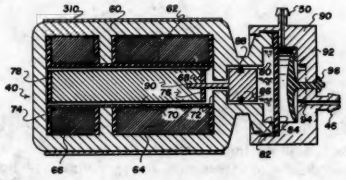
rods connected to each other at one end thereof and having semicircular cross sections so that when one rod is placed adjacent the other, they will form a complete circle in cross section, the ends of said rods opposite to said one end thereof being provided with means for attachment to said respective output elements of said driving means.

4,607,627

SOLENOID-ACTUATED HYGIENIC APPLIANCE

Leland C. Leber, and David Swigert, both of Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.

Filed Sep. 10, 1984, Ser. No. 648,766
Int. Cl.[4] A61H *13/00*; F04B *43/04*
U.S. Cl. 128—66 **20 Claims**



1. A hygienic appliance combination comprising:
a housing;
a source of liquid associated with said housing;
delivery means coupled to said housing for launching pulses of said liquid to a point of impact;
and a pump located within said housing and coupled to accept said liquid and provide pulses of said liquid into said delivery means, said pump including:
enveloping means defining an elongated central bore of predetermined length;
at least one solenoid winding positioned to deliver magnetic flux into the interior of said bore;
a plunger of magnetic material sized to slide within said bore and of a length less than said predetermined length;
a chamber defined in said pump;
means for inletting liquid from said source into said chamber;
means for outletting liquid from said chamber into said delivery means;
check valve means effectively disposed in the path of flow of said liquid for permitting flow of said liquid at least primarily in the direction from said source, through said chamber and out of said delivery means;
reciprocating means coupled into said chamber for alternately effecting the drawing of said liquid into said chamber and propelling said liquid from said chamber through said outletting means into said delivery means;
means disposed within said housing and adjacent to said chamber for indirectly slaving movement of said reciprocating means to movement of said plunger;
means for cyclically energizing said one winding to move said plunger and said reciprocating means each in a given direction;
and means for urging said plunger and said reciprocating means each in a return direction opposite said given direction.

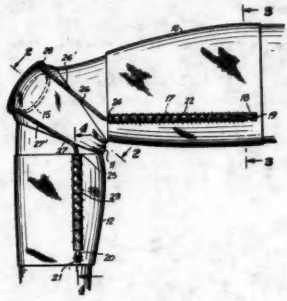
4,607,628

PATELLA SUPPORT BRACE

Joseph H. Dashefsky, 700 Old Country Rd., Plainview, N.Y. 11803

Filed May 23, 1985, Ser. No. 737,249
Int. Cl.[4] A61F *3/00*
U.S. Cl. 128—80 C **7 Claims**

1. A knee brace adapted to support the patella of a wearer comprising a patella pad, means for maintaining said pad laterally adjacent the patella of a wearer, and laterally shiftable force developing means operatively connected to said pad for urging said pad laterally in a medial direction thereby to exert progressively increasing, medially directed forces upon said



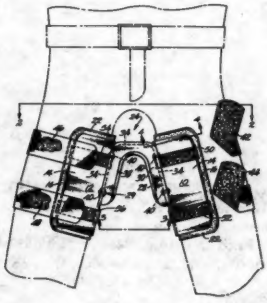
pad responsive to articulating movements of the leg from a flexed to an extended condition.

4,607,629

DYNAMIC POST-OPERATIVE HIP ABDUCTION BRACE

Max Lerman, 1950 Carla Ridge, Beverly Hills, Calif. 90210

Filed Mar. 21, 1985, Ser. No. 715,061
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—80 A **8 Claims**



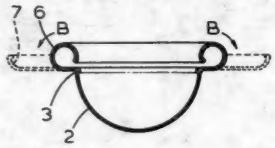
1. A dynamic hip abduction brace comprising:
a pair of laterally spaced apart U-shaped cuffs adapted for attachment to the inside regions of legs above the knees;
a generally inverted U-shaped supporting bridge secured between the leg-supporting cuffs and comprising a unitary piece having a cross-member extending between the leg-supporting cuffs, and a pair of spaced apart outwardly diverging leg portions formed integrally with and extending away from the cross-member of the supporting bridge; and
means rigidly affixing the leg portions of the bridge to the leg-supporting cuffs so that each leg member is substantially immovable relative to its corresponding cuff for holding the legs at a fixed abduction angle; the unitary bridge member being made from a semi-rigid material such that the cross-member of the bridge is substantially rigid longitudinally to maintain the cuffs in a rigidly fixed spaced apart position for maintaining a fixed spacing between the legs of a patient, while each leg portion of the bridge is bendable in a direction generally perpendicular to the plane of the bridge member so that each leg member and its corresponding cuff can be rotated forward or backward at the end of the bridge cross-member to permit a normal walking gait.

4,607,630

INTRAVAGINAL CONTRACEPTIVE DEVICE

Marc Spits, Achel, Belgium, assignor to Fundatech S.A., Geneva, Switzerland

Filed Jun. 6, 1984, Ser. No. 617,975
Claims priority, application Netherlands, Jun. 13, 1983, 8302103
Int. Cl.[4] A61F 5/46
U.S. Cl. 128—127 10 Claims



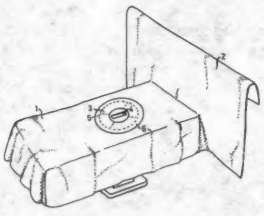
1. Intravaginal contraceptive device such as a diaphragm or pessary, characterized by said device comprising a central, flexible cap-like body portion engaged by the inside of a rigid inner ring with almost fixed diameter, and by an outer part lying in the plane of and around the inner ring and being connected thereto, said outer part consisting of a membrane bent along the outer circumference spirally out of the plane of the inner ring, said membrane being made of a material having the ability of expanding under the influence of the local circumstances after being inserted into the vagina, thus unrolling the spiral peripheral structure and increasing the outer diameter of the outer part.

4,607,631

ARRANGEMENT IN SURGICAL SHEETS

Carl-Otto Hanssen, Kullavik, Sweden, assignor to Molnlycke AB, Gothenburg, Sweden

Filed Oct. 16, 1984, Ser. No. 663,041
Claims priority, application Sweden, Oct. 28, 1983, 8305944
Int. Cl.[4] A61F 13/00
U.S. Cl. 128—132 D 6 Claims



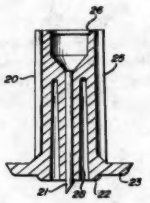
1. A surgical sheet having a relatively large circular hole therethrough adapted to be placed over an area of a patient where an operation is to be performed, a circular disk larger than said hole and having an elongated opening therethrough, the disk having at least two layers at least one of which comprises a liquid impermeable material, said layers being joined to each other about a circle of a diameter no greater than the diameter of said circular hole, the margins of said circular hole being received between said layers radially outwardly of said circle.

4,607,632

SKIN TESTING DEVICE WITH FUNNEL LOADING

Cynthia B. Brennan, and Louis G. Brennan, both of Stockton, Calif., assignors to Aller-Screen, Inc., Stockton, Calif.

Filed Apr. 30, 1984, Ser. No. 605,249
Int. Cl.[4] A61B 10/00
U.S. Cl. 128—743 7 Claims



1. A skin test kit for invivo intracutaneous use including a base member having base well means for receiving a cannula point and holding liquid test substance, said base member having at least one depression for receiving and holding a corresponding injection unit in cooperation with kit lid means, said injection unit comprising a plate portion received by said base member; an open-top handle portion attached to the plate portion on one side thereof; a hollow cannula element mounted on said plate and extending outwardly from said plate opposite said handle portion a pre-determined length for intracutaneous injection, said cannula having a sharp skin-piercing point at its lower extremity; said handle portion having an integral interior funnel top provided with a downwardly sloping interior surface terminating inwardly at an upper end of said hollow cannula and communicating with said cannula element for applying liquid test substance through said funnel means; and said kit lid means fitting over said base member to enclose said injection unit and having a gas-tight slidable peripheral seal whereby closure of said kit lid means can force liquid from the funnel top into the base well means.

4,607,633

UNITARY ADHESIVE BANDAGE AND PACKAGE

Nels J. Lauritzen, Piscataway, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Division of Ser. No. 479,599, Mar. 28, 1983, Pat. No. 4,545,372.
This application Jun. 10, 1985, Ser. No. 743,260
Int. Cl.[4] A61L 15/00
U.S. Cl. 128—156 14 Claims

1. A method for the continuous production of a plurality of adhesive bandage strips enclosed in an integral wrapper from a continuous length of a bulky, nonwoven fabric comprising the steps of

(a) forming a continuous length of a bulky, nonwoven fabric comprising a bandage portion and adjacent wrapper portion,

(b) lapping the central area of said bandage portion in a Z-fold to form a triple thickness pad area extending down the length of said bandage portion with single thickness wing areas extending outward therefrom,

(c) securing the folded central pad area of the bandage portion to prevent the unfolding thereof,

(d) compacting said wrapper portion and said single thick-

ness wing areas of said bandage portion to a dense, sheet-like structure,

(e) applying an adhesive coating to one surface of said compacted wing areas of said bandage portion,

(f) folding said wrapper portion around said bandage portion to cover both surfaces thereof, said wrapper portion having adhesive release properties over at least that area of the surface thereof in contact with adhesive-coated surfaces of said bandage portion,

(g) sealing the edge of said wrapper portion to the underlying edge of said bandage portion to enclose the bandage portion within the wrapper, and

(h) cutting said folded wrapper and enclosed bandage portion into narrow strips transversely to the machine direction thereof and sealing the cut edges of said wrapper to the underlying bandage whereby to obtain an adhesive strip bandage fully enclosed within said wrapper.

4,607,634

ANAESTHETIC VAPORIZER

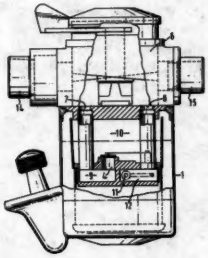
Thomas R. Clapham, Skipton, England, assignor to The BOC Group plc, Windlesham, England

Filed Sep. 6, 1984, Ser. No. 647,950

Claims priority, application United Kingdom, Sep. 12, 1983, 8324313

Int. Cl.[4] A61M *15/00*

U.S. Cl. 128—203.25 **3 Claims**



1. An anaesthetic vaporizer comprising a body part, said body part including a valve chamber and a vaporizing chamber for volatile liquid anaesthetic, a valve arrangement mounted within said valve chamber and dividing said valve chamber into an inlet portion and an outlet portion, a body part inlet communicating with said inlet portion for receiving carrier gas and a body part outlet communicating with said outlet portion for the passage therefrom of carrier gas together with entrained anaesthetic vapor, a vaporizing chamber inlet communicating between said inlet portion and said vaporizing chamber for receiving a first stream of carrier gas from said body part inlet and a vaporizing chamber outlet communicating between said vaporizing chamber and said outlet portion for delivering said carrier gas with entrained anaesthetic vapor to said body part outlet, said valve arrangement comprising a housing and a valve body rotatable within said housing, said housing having at least two spaced inlet openings communicating with said inlet portion and an outlet opening communicating with said outlet portion for passage therethrough of a second stream of carrier gas, said valve body rotatable to selectively cover and uncover one or more of said inlet openings to vary the resistance to flow of said second stream of carrier gas from said body part inlet to said body part outlet, each of said inlet openings including a removable jet having a bore of predetermined diameter, wherein said valve arrangement permits selective mixing of said second stream of carrier gas and said first stream of carrier gas and entrained anaesthetic vapor to control the mixture thereof from said body part outlet.

4,607,635

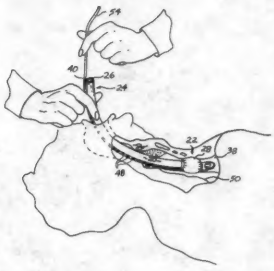
APPARATUS FOR INTUBATION

Eugene L. Heyden, S. 627 Bernard #8, Spokane, Wash. 99204

Filed Sep. 27, 1984, Ser. No. 655,089

Int. Cl.[4] A61M *16/00*

U.S. Cl. 128—207.15 **9 Claims**



1. An apparatus for intubation of a body pathway, comprising:

an elongated tubular member having a wall with an inner wall surface and an outer wall surface, and also having a central axis, said tubular member having a distal end residing within the body pathway during intubation, and a proximal end extending from the body pathway during intubation;

a primary lumen defined by the wall of said tubular member and extending from said distal end to said proximal end thereof;

an expandable cuff carried by said tubular member adjacent said distal end for providing, when expanded, a seal with walls of the body pathway;

an elongated guide means adapted for slidably receiving a suction catheter therein and having a region therein for accommodating said suction catheter, said guide means integral with and defined within the wall of said tubular member, having a portion thereof included in the vicinity of the proximal end of said tubular member, and extending in length therein sufficiently to provide travel by said suction catheter away from a proximal end thereof along a substantial length of said tubular member toward an opposing distal end thereof located in the vicinity of said end toward cuff while preventing said suction catheter from contacting a wall of said body pathway;

said guide means including fluid communication means integral to the wall of said tubular member and residing between the proximal end thereof and said cuff, said fluid communication means for providing fluid communication and fluid transport over a substantial length of said guide means between the region within said guide means and the body pathway whereby said suction catheter can be moved within said guide means to remove secretions over any of several locations along a substantial length of said tubular member; and

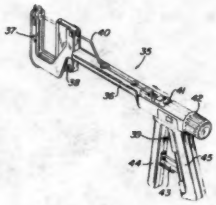
means to prevent the extention of said suction catheter from within said guide means to beyond the distal end thereof, preventing said suction catheter from advancing from said region to beyond said guide means.

4,607,636

SURGICAL INSTRUMENT FOR APPLYING FASTENERS HAVING TISSUE LOCKING MEANS FOR MAINTAINING THE TISSUE IN THE INSTRUMENT WHILE APPLYING THE FASTENERS (CASE I)

John Kula, Budd Lake, and Anthony S. Miksza, Jr., Jersey City, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 16, 1984, Ser. No. 631,121
Int. Cl.[4] A61B *17/00, 17/12*
U.S. Cl. 128—334 R 6 Claims



1. A surgical instrument for stitching tissue by means of staples, said instrument comprising: a support body, a pair of jaws mounted at one end of said support body, a staple housing mounted in one of said jaws, means mounted on said support body for moving said jaw containing said staple housing towards the other jaw to close the gap and clamp tissue placed therebetween, drive means mounted on said support body for driving the staples from the jaw on which the staple housing is mounted towards the opposite jaw, actuating means mounted at the end of said support body opposite said end on which the jaws are mounted for actuating said staple drive means, and means cooperating with the open end of said jaws to hold tissue placed therebetween while said staples are being driven, said means providing rigidity between said jaws.

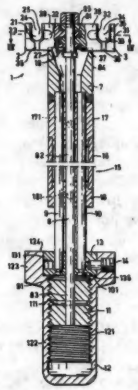
4,607,637

SURGICAL INSTRUMENT FOR PERFORMING ANASTOMOSIS WITH THE AID OF RING-LIKE FASTENING ELEMENTS AND THE FASTENING ELEMENTS FOR PERFORMING ANASTOMOSIS

Anders Berggren, Bergdalsgatan 6, 582 45 Linköping; Hakan Rohman, Vitsippestigen 4, 590 20 Mantorp, and Leif Östrup, Onkel Adamsgatan 10, 582 35 Linköping, all of Sweden

Filed Jul. 22, 1983, Ser. No. 516,462
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—334 C 4 Claims

1. A surgical instrument for joining blood vessel ends or ends of other tubular organs and establishing liquid connection between them, i.e., anastomosis, by means of fastening means comprising connectable rings, said instrument comprising at least two clamping means with stop means for each fastening means, said clamping means being rotatably connected to the instrument and being actuatable by a mechanism for being turned towards each other, said mechanism further comprising a guide bushing which is longitudinally movable along the instrument, said guide bushing being provided with guide surfaces arranged at an angle which is sharp with respect to the longitudinal axis of the instrument, said guide surfaces of the guide bushing cooperating with guide surfaces on corresponding ones of said clamping means so that said clamping means are turned towards each other when the guide bushing is moved towards said clamping means, said guide bushing further comprising a pushing-out element which, upon continued displacement of the guide bushing, actuates the fastening means through grooves in the clamping means so that they are pushed out of the instrument together with the connected the



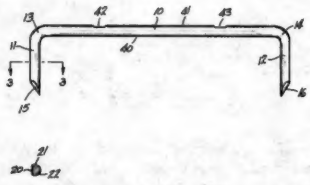
vessels after the guide bushing has turned the clamping means so that the fastening mens are connected to each other.

4,607,638

SURGICAL STAPLES

Lawrence Crainich, Stratford, Conn., assignor to Design Standards Corporation, Bridgeport, Conn.

Filed Apr. 20, 1984, Ser. No. 602,406
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—335 12 Claims



4. A surgical staple having a U-shaped configuration and an elongated base portion and two legs substantially perpendicular to said base portion connected thereto at one end by a transition portion and terminating at the other end in a sharpened point, said staple being deformed in use into an open-sided substantially O-shaped configuration bended at two points along said elongated base portion, wherein said base portion has an inner side facing said legs and outer side opposed thereto and wherein said elongated base portion has flattened notched portions on the outside at the locus of the elongated base portion bends extending over the entire locus of the elongated base portion bends and spaced from each other and spaced from said transition portions.

6. A surgical staple having a U-shaped configuration and a substantially round cross-section and an elongated base portion and two legs substantially perpendicular to said base portion connected thereto at one end by a transition portion and terminating at the other end in a sharpened portion, said staple being deformed in use into an open-sided substantially O-shaped configuration bended at two points along said elongated base portion, wherein said base portion has an inner side facing said legs and an outer side opposed to said legs and wherein said staple has at least one flattened, work hardened area from 0.005" to 0.010" deep along the surface of said staple.

10. A surgical staple having a U-shaped configuration and an elongated base portion and two legs substantially perpendicu-

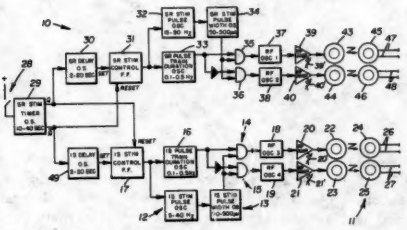
lar to said base portion connected thereto at one end by a transition portion and terminating at the other end in a sharpened portion, wherein said elongated base portion is indented in an amount from 0.020" to 0.050" deep to form two upstanding ears adjacent said transition portion separated by a lower ledge.

12. A surgical staple having a U-shaped configuration and an elongated base portion and two legs substantially perpendicular to said base portion connected thereto at one end by a transition portion and terminating at the other end in a sharpened point, wherein said sharpened point is characterized by having greater than one facet and has a rounded or semi-circular configuration with a radial nose.

4,607,639
METHOD AND SYSTEM FOR CONTROLLING BLADDER EVACUATION

Emil A. Tanagho, San Rafael; Richard A. Schmidt, San Francisco; Curtis A. Gleason, Palo Alto, and Tom F. Lue, Millbrae, all of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed May 18, 1984, Ser. No. 611,836
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 E **33 Claims**



1. A method for simultaneously controlling the coordinated and synchronized functions of a bladder and associated external sphincter in an anatomical system of a selected human, said system including S2, S3 and S4 sacral segments of a spinal cord and a sacral nerve originating at each of said sacral segments and each of said sacral nerves including a dorsal root and a ventral root in a sacral canal, said sacral nerves forming a pelvic nerve when they leave the sacral canal connected to said bladder to control contractions of a detrusor muscle thereof, a superior somatic nerve and an inferior somatic nerve connected to muscles controlling the external sphincter of said bladder, said method comprising the steps of

identifying the anatomical location and functional characteristics of those nerve fibers controlling the separate functions of said bladder and external sphincter,

separating motor, sensory and autonomic and somatic nerve fibres controlling the separate functions of the bladder and associated external sphincter from other nerve fibers,

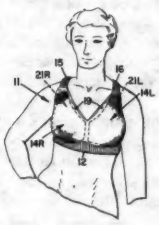
positioning electrode means on selected ones of said nerve fibers for electrically stimulating such fibers while simultaneously isolating adjacent nerve fibers therefrom, and

applying coordinated and synchronized pulse trains sequentially or simultaneously to said electrode means to simultaneously and/or separately control the functions of said bladder and external sphincter.

4,607,640
ATHLETIC/INDUSTRIAL BRASSIERE WITH PROTECTIVE INSERTS

LeRoy H. McCusker, R.R. 4, Box 162, Cannon Falls, Minn. 55009

Filed Nov. 18, 1985, Ser. No. 799,091
Int. Cl.[4] A41C *3/00*
U.S. Cl. 128—425 **24 Claims**



1. A protective brassiere, comprising:

a fabric portion flexibly constructed to be worn by and conform to the thoracic cage of the user, the fabric portion comprising two generally concave members constructed and disposed to overlie the breasts of the user;

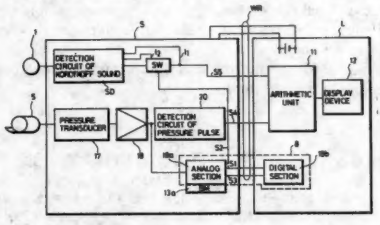
each of said concave members comprising two layers of fabric defining a thin pocket therebetween;

and a protective insert disposed in each of said thin pockets, each of said inserts being generally concave in shape and comprising a substantially rigid central concave portion to protect the breast from direct impact, and a peripheral portion that is flexible at least in part to conform the thoracic cage of the user and to transmit thereto forces imparted to said central concave portion.

4,607,641
ELECTRONIC SPHYGMOMANOMETER

Toshitaka Fukushima, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Oct. 29, 1984, Ser. No. 665,775
Claims priority, application Japan, Nov. 4, 1983, 58-207077; Nov. 4, 1983, 58-207078; Nov. 4, 1983, 58-207083; Nov. 4, 1983, 58-207084; Nov. 9, 1983, 58-210306; Nov. 10, 1983, 58-211654; Apr. 20, 1984, 59-80973
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—680 **5 Claims**



1. In an electronic sphygmonanometer for measuring a person's blood pressure and having detection circuit means for detecting Korotkoff sounds received from a microphone, a pressure transducer for converting a person's blood pressure to an analog electric signal, an amplifier for amplifying the analog electric signal, a detection circuit for detecting a pressure pulse signal based on the amplified analog electric signal and producing a reference pulse signal in synchronism with said pressure pulse signal, a double integral type analog-to-digital converter

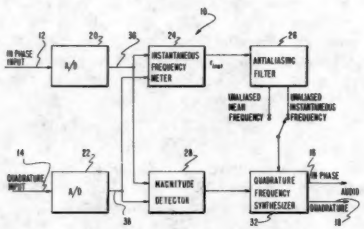
for converting said analog electric signal to a digital signal, an arithmetic unit for receiving the output signals of said detection circuit means, said detection circuit and said double integral type analog-to-digital converter, and a display device for digitally indicating the person's systolic pressure and diastolic pressure, the improvement comprising: a detection section including said detection circuit means, said pressure transducer, said amplifier, said detection circuit and an analog section of said double integral type analog-to-digital converter; a logic section formed on one MOS IC chip and including a digital section of said double integral type analog-to-digital converter, said arithmetic unit and said digital display device; and a plurality of signal lines connected between said detection section and said logic section and including a first signal line for transmitting said output signal of said detection circuit means to said arithmetic unit, a second signal line for transmitting said reference pulse signal serving as an output of said detection circuit to said arithmetic unit, and a third signal line for transmitting an output of said analog section to said digital section of said double integral type analog-to-digital converter.

4,607,642

UNALIASED QUADRATURE AUDIO SYNTHESIZER

Jeffry E. Powers, Bainbridge Island, Wash., assignor to Advanced Technology Laboratories, Bothell, Wash.

Filed Apr. 19, 1984, Ser. No. 601,816
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—663 **4 Claims**



1. An unaliased quadrature audio synthesizer which preserves full spectral content of an original ultrasound Doppler signal derived from blood flow in a sample volume, which Doppler signal may include aliased frequencies, comprising:

(a) means adapted to receive said Doppler signal and in the presence of said aliased frequencies for generating a digitized signal corresponding to the instantaneous, unaliased Doppler shift frequency resulting from blood flow in the sample volume

(b) means for generating quadrature audio signals corresponding to said digitized signal.

4,607,643

ENDOTRACHEAL TUBE/STETHOSCOPE COMBINATION

Floyd R. Bell, 1530 Summa Meadow Rd., Lexington, Ky. 40502, and Thomas H. McKay, Meadowoods Apts., No. 28, 1701 Clay St., Flatwoods, Ky. 41139

Filed Nov. 9, 1984, Ser. No. 670,371
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—715 **12 Claims**

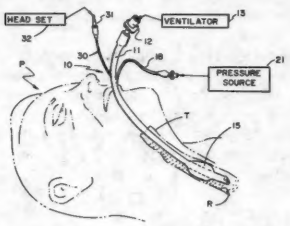
1. An assembly for providing endotracheal ventiliation and vital sounds monitoring by stethoscope in a patient comprising

a tracheal tube;

an inflation cuff surrounding the tube adjacent the distal end;

means for pressurizing said cuff for peripherally sealing the assembly against the trachea wall; and

an audio cuff extending at least partially coextensive with said inflation cuff along the tube and having sufficient



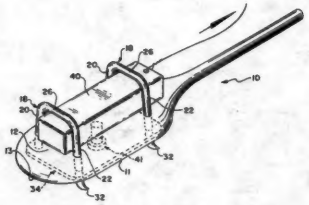
resiliency to vibrate in response to patient vital sounds to permit monitoring during patient ventilation.

4,607,644

SELF-SUTURING POROUS EPICARDIAL ELECTRODE ASSEMBLY

Peter J. Pohndorf, Miami Shores, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Apr. 1, 1985, Ser. No. 718,463
Int. Cl.[4] A61N *1/04*; A61B *5/04*
U.S. Cl. 128—785 **10 Claims**



1. A self-suturing epicardial electrode assembly comprising:

a generally planar body made of a flexible rubber-like material, said body having upper and lower substantially parallel surfaces and at least two pairs of holes through said body, extending substantially perpendicular to said upper and lower surfaces;

an electrode embedded in said said body, said electrode having a downward facing electrode contact face which is exposed below said lower surface of said body for engagement with the myocardial wall of a heart;

an insulated electrode wire conductor embedded at its distal end in said body and conductively attached to said electrode, said wire conductor extending from said body into a pacing lead;

at least two spring anchor members, each spring anchor member having a pair of downwardly projecting, outwardly tensioned legs mutually attached at their upper ends to a bight, each leg at its lower end terminating in an outwardly and downwardly projecting, sharply pointed, curved prong, each of said pairs of legs being received in one of said pairs of holes, each of said spring anchor members having an upper armed position and a lower activated position, said prongs in said armed position being adjacent said lower surface of said body and in said activated position being capable of penetrating the myocardial wall of a heart and operating to secure said body to said myocardial wall;

means for retaining said spring anchor members in said armed position; and

means for removing said means for retaining said spring anchor members in said armed position.

4,607,645

SHREDDED TOBACCO SUPPLYING DEVICE FOR CIGARETTE MAKING MACHINE

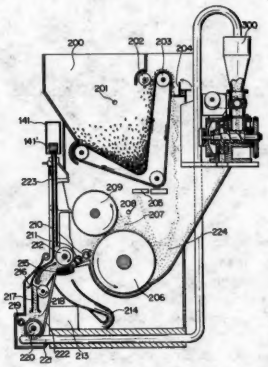
Yutaka Okumoto; Hideki Kobayashi; Kanjo Shiote, and Toyomi Arakawa, all of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Dec. 6, 1983, Ser. No. 558,667

Claims priority, application Japan, Dec. 7, 1982, 57-213304

Int. Cl.[4] A24C *5/14, 5/18*

U.S. Cl. 131—109.1 4 Claims



1. A shredded tobacco supplying device for a cigarette making machine comprising:

feeding means for feeding shredded tobacco including heavy and light tobacco pieces in a regulated manner;

a high speed impellor arranged to receive shredded tobacco from said feeding means and scatter said tobacco in a predetermined direction;

a chimney structure vertically arranged substantially above the path of said scattered shredded tobacco and connected to a negative pressure source at an upper portion thereof, whereby light pieces of said tobacco are drawn through said chimney structure for a subsequent cigarette rolling operation;

a channel vertically arranged substantially below said scattered shredded tobacco to receive pieces included in said scattered shredded tobacco that dropped downward;

means for collecting said dropped pieces;

means for crushing said dropped pieces into smaller pieces of reduced weight;

means for supplying said crushed pieces back to said feeding means.

4,607,646

PROCESS FOR MODIFYING THE SMOKE FLAVOR CHARACTERISTICS OF TOBACCO

A. Clifton Lilly, Jr.; Henry B. Merritt, and Cassandra D. Owens, all of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 6, 1984, Ser. No. 577,438

Int. Cl.[4] A24B *15/00*

U.S. Cl. 131—309 10 Claims

1. A method for modifying the smoke flavor characteristics or non-burley tobacco to impart thereto burley-like smoke flavor characteristics, comprising the steps of:

a. contacting the non-burley tobacco with ammonia in a pressure-controlled system to provide sufficient pressure to maintan the continuing presence of ammonia; and

b. reacting said ammonia with natural sugars in said tobacco by heating said tobacco and ammonia to a temperature of between about 80° C. to about 150° C. to impart burley-like smoke flavor characteristics to said tobacco and retain therein substantially all volatile tobacco components.

4,607,647

SMOKING ARTICLES

Frederick J. Dashley, New Milton, and David J. Dittrich, Southampton, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Jun. 11, 1984, Ser. No. 619,058

Claims priority, application United Kingdom, Jun. 15, 1983, 8316266

Int. Cl.[4] A24B *15/28*

U.S. Cl. 131—365 13 Claims

1. A smoking article wrapping paper which effects at least thirty percent reduction of side stream TPM as compared with a conventional wrapper paper, the paper having an air permeability of less than 10 CORESTA units and including a stain resist substance substantially uniformly distributed substantially throughout the paper.

4,607,648

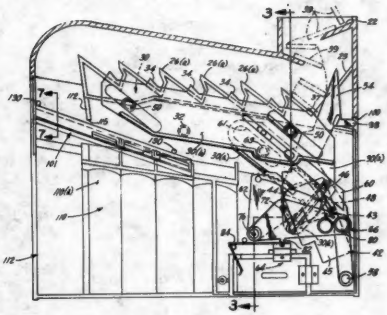
COIN BANK WITH FLIPPING ACTION AND SORTING

Wilfred H. Hough, Cleveland, Ohio, assignor to Nottingham-Spirk Design Inc., Cleveland, Ohio

Filed May 17, 1985, Ser. No. 735,318

Int. Cl.[4] G07D *3/00*

U.S. Cl. 133—3 D 19 Claims



1. A coin bank comprising a housing having an inlet for receiving a group of coins of different diameters; a coin storage means for receiving coins of different diameters; means actuated by introduction of coins into said inlet for separating individual coins from a group deposited into said inlet and for advancing the separated coins in a moving file; and means for receiving coins from said moving file and for directing the coins to the coin storage means; said housing having a transparent wall disposed so as to allow coins in said moving file to be viewed therethrough.

4,607,649

COIN SORTER

Dale L. Taipale, Delafield, and John H. Winkelman, Hartland, both of Wis., assignors to Brandt, Inc., Watertown, Wis.

Filed Dec. 21, 1983, Ser. No. 563,804

Int. Cl.[4] G07D *3/00*

U.S. Cl. 133—3 C 16 Claims

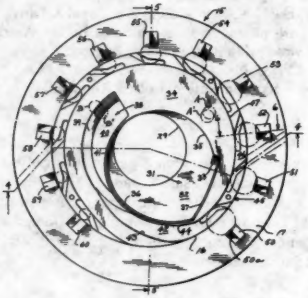
14. A coin handling mechanism for forming a plurality of coins into a single layr and a single file, comprising:

a rotatable disc having a resilient surface;

means for rotating said disc; and

a stationary plate having non-resilient surfaces confronting

the resilient surface of said disc, said plate including a central opening so that coins may be placed against said disc, said non-resilient surfaces including a series of guide surfaces spaced from the disc a distance that is less than the thickness of the coins and at least one arcuate shoulder



that faces outwardly towards the perimeter of said plate, said guide surfaces adapted to pinch coins between the plate and said disc to urge a single layer of coins to form in a single file with their inner edges against the shoulder as said disc rotates.

4,607,650

COIN DISPENSING APPARATUS

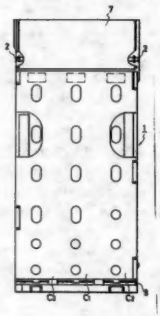
Osamu Kobayashi; Koji Yukimoto, and Mitsugu Mikami, all of Saitama, Japan, assignors to Kabushiki Kaisha Nipponcoinco, Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,616

Claims priority, application Japan, Sep. 6, 1983, 58-162541; Sep. 14, 1983, 58-141545[U]; Sep. 28, 1983, 58-178251

Int. Cl.[4] G07D *1/02*

U.S. Cl. 133—5 R **10 Claims**



1. A coin dispensing apparatus, comprising:

a coin tube cassette detachably mounted in said coin dispensing apparatus, said cassette having a plurality of coin tubes for storing coins in a direction of thickness of said coins;

code setting means for setting a code indicative of a combination of denomination of coins stored in said plurality of coin tubes; and

controlling means for controlling coin dispensing on said code set by said code setting means so as to selectively dispense at least one coin consisting of at least one denomination.

4,607,651

AUTOMATIC SET-UP SYSTEM

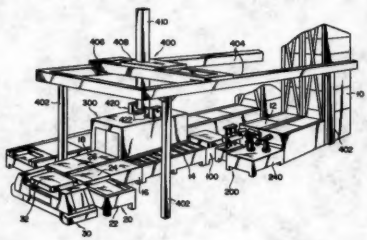
Akihiko Noh, Chigasaki; Yoshiaki Saijo, Yokohama; Shinichi Sato, Kawasaki, and Ichiro Tanaka, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 581,417, Feb. 17, 1984, Pat. No. 4,543,970. This application Jun. 14, 1985, Ser. No. 744,699

Claims priority, application Japan, Feb. 21, 1983, 58-26236; Oct. 18, 1983, 58-195073; Oct. 18, 1983, 58-195076

Int. Cl.[4] B08B *3/00*

U.S. Cl. 134—62 **6 Claims**



1. An automatic set-up system for setting up a work to be processed by a flexible manufacturing system automatic machine tool, comprising:

a pallet on which said work is mounted;

a setting table on which said pallet having said work thereon is placed;

a convey unit having grip means for sequentially gripping and conveying said pallet and the work onto said setting table;

a clamp mounted on said pallet to clamp and fix the work on said pallet;

a cleaner for cleaning the work and said pallet which are fixed together by said clamp;

feeding means for delivering the work and said pallet which are fixed together by said clamp to the automatic machine tool and for feeding a processed work and said pallet to said cleaner;

a setting robot and a jig table on which said clamp is placed, said setting robot having a lift arm, a turning arm supported by said lift arm and arranged to turn along the horizontal direction with respect to said lift arm;

lifting means for vertically moving said lift arm;

turning means for turning said turning arm; and

a gripper for gripping said clamp supported at a distal end of said turning arm, said lift arm being moved upward by said lifting means and said turning arm being turned by said turning means after said gripper grips said clamp on said jig table, and thereafter said lift arm being moved downward by said lifting means to set said clamp at a predetermined position of said pallet placed on said setting table.

4,607,652

CONTACT LENS CLEANING APPARATUS

Simon K. C. Yung, 5, Purves Road, Jardines Lookout, Hong Kong

Filed Nov. 29, 1984, Ser. No. 676,004

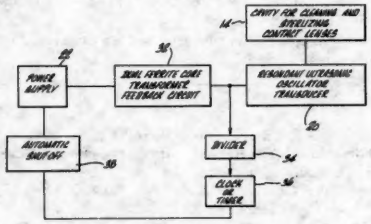
Claims priority, application United Kingdom, Aug. 29, 1984, 8421836

Int. Cl.[4] B08B *3/12*

U.S. Cl. 134—184 **10 Claims**

1. Contact lens cleansing apparatus comprising at least one cavity for containing at least one contact lens and cleansing liquid, an ultrasonic transducer for applying ultrasonic frequency mechanical vibrations to the liquid and contact lens contained in said cavity, DC powered oscillating means for

driving the ultrasonic transducer at a substantially stable resonant frequency in the range 20 to 40 kHz, said oscillating means including a dual ferrite core transformer feedback circuit, and a timer for energization of the oscillatiing means for a predetermined period of time, said timer being controlled by the resonant frequency of the oscillating means.



4,607,653

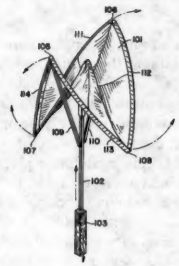
COLLAPSIBLE UMBRELLA WITH CIRCULAR RIM

Terry Hermanson, c/o 41 Madison Ave., New York, N.Y. 10010

Filed Mar. 8, 1985, Ser. No. 709,683

Int. Cl.[4] A45B *19/10, 19/00, 11/00, 21/00*

U.S. Cl. 135—20 M **11 Claims**



1. An umbrella comprising

a domed shaped canopy including fabric attached to a hoop;

said hoop comprised of rim members prestressed in a convex shape havng a substantially less convex straight shape with the umbrella in a closed position and having a convex shape with the umbrella in an open position;

means to connect said rim members to each other;

and means to move said canopy between said open and closed positions including

a center shaft means extending through said hoop of said rim members and surrounded by said rim members when the umbrella is closed.

4,607,654

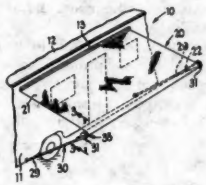
AWNING LATCH ASSEMBLY

Henry J. Duda, Mount Prospect, Ill., assignor to Randall Equipment Company, Mt. Prospect, Ill.

Filed Feb. 1, 1985, Ser. No. 697,477

Int. Cl.[4] E04H *15/08;* **E04F** *10/06;* **G05G** *5/06;* **B65H** *75/48*

U.S. Cl. 135—89 **12 Claims**



1. In an awning for a travel trailer or mobile home including a flexible awning covering wound on a roller which is rotatable on a fixed shaft carried by a supporting frame, the improvement comprising: a first member fixedly secured to the shaft, a second member carried by the roller for rotation therewith adjacent to said first member and having a cylindrical wall portion coaxial with said shaft, said first member and said cylindrical wall portion cooperating in use to define an annular cavity therebetween, said cylindrical wall portion having a plurality of keeper recesses therein formed between inwardly extending detents, said recesses communicating with said annular cavity, and a latch member carried by said first member and projecting into said cavity parallel to said axis for movement between a latching position disposed in the path of said keeper recesses and an unlatching position out of the path of said keeper recesses, said latch member in the latching position thereof being engageable in a selected one of said keeper recesses for inhibiting rotation of said second member and the roller said latch member further comprising a grasping means extending outside said annular cavity.

4,607,655

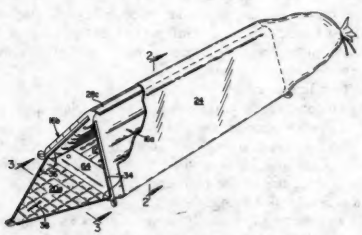
SURVIVAL SHELTER

David L. R. Wagner, 6410 NE. Willow, Portland, Oreg. 97266, and Donald E. Bixler, 205 3rd Ave., Oregon City, Oreg. 97045

Filed Apr. 9, 1984, Ser. No. 598,484

Int. Cl.[4] E04H *15/44, 15/30;* **E02B** *1/34;* **A61G** *1/00*

U.S. Cl. 135—95 **13 Claims**



1. A self-supporting, inflatable survival shelter comprising:

an inflatable floor portion of air impermeable material;

a pair of inflatable side portions of air impermeable material, said floor and side portions having a substantially triangular configuration when inflated;

a pair of opposed, quilted end portions of non-inflatable insulation material;

fastening means cooperable with one of said end portions and said side portions to permit opening and closing of said one end portion;

said floor and side portions each including:

an outer wall;

an inner wall; and

a plurality of parallel, substantially I-shaped strips connected to said inner and outer walls, and extending substantially the entire length or width of said inner and outer walls, such that said inner and outer walls, when inflated, are spaced from one another and divided into a plurality of air-filled cells;

the shelter further including longitudinally extending strips connecting adjacent abutting cells of said floor and side portions, each said strip and associated cells cooperating to form a longitudinal insulating air pocket adjacent an interface between said abutting cells when inflated.

4,607,656

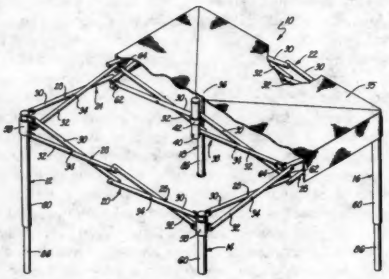
QUICK ERECTION COLLAPSIBLE SHELTER

Mark C. Carter, 210 Pason, San Dimas, Calif. 91773

Filed Sep. 26, 1983, Ser. No. 535,426

Int. Cl.[4] E04B *7/16*; A45F *1/16*

U.S. Cl. 135—110 **21 Claims**



8. A collapsible shelter which can be quickly erected including:

at least four telescoping legs, each telescoping leg having:

an upper portion;

a slider member connected to said upper portion for sliding contact therewith;

a lower portion for engagement with the ground, said lower portion being slideably mounted to said upper portion; and

first releasable locking means for maintaining said upper and lower portions in an extended condition;

at least four pairs of X configured truss structures, each X configured truss structure of each pair of X configured truss structures having:

a first link having:

an outer end pivotally connected to a leg upper portion;

a center portion; and

an inner end pivotally connected to an inner end of said first link inner end of another X configured truss structure of the pair; and

a second link having:

an outer end pivotally connected to a slider member;

a center portion pivotally connected to said center portion of said first link of said X configured truss structure; and

an inner end pivotally connected to an inner end of a second link of the other X configured truss structure of the pair;

means for releasably fixing at least one of said slider members in a position to maintain said shelter in an erected condition including:

second releasable locking means for maintaining said upper portion of at least one telescoping leg and the slider member connected thereto in a shelter erecting position; and

a canopy supported by said legs and leg connected truss structures.

4,607,657

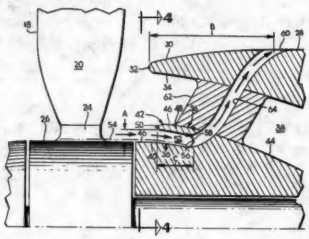
AIRCRAFT ENGINE INLET

Robert Hirschkron, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Oct. 28, 1985, Ser. No. 791,830

Int. Cl.[4] F02C *7/04*

U.S. Cl. 137—15.1 **10 Claims**



1. An air inlet for an aircraft engine comprising:

a nacelle for containing the engine having a leading edge, and including an outlet aperture in an outer surface thereof for being in flow communication with ambient air;

a fairing spaced radially inwardly from said nacelle for defining an inlet duct therebetween for channeling air to the engine, said fairing including a plurality of circumferentially spaced inlet apertures in an inner surface thereof for being in flow communication with ambient air;

a plurality of circumferentially spaced struts extending between forward ends of said fairing and said nacelle; and

a plurality of flow channels, each extending in flow communication with a respective one of said inlet apertures, through said struts and nacelle and to said outlet aperture.

4,607,658

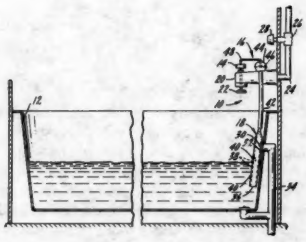
WATER LEVEL CONTROL DEVICE

Gerald M. Fraser, 7460 Shaw Ave., Sardis, B.C., Canada (V2R 1A5), and Marcel J. Champigny, No. 27 46689 1 Ave., Chilliwack, B.C., Canada (V2P 1XY)

Filed Nov. 1, 1985, Ser. No. 793,903

Int. Cl.[4] F16R *21/18*

U.S. Cl. 137—393 **10 Claims**



1. A device dependent upon the water level in a basin for

automatically controlling the flow of water into the basin, comprising

(a) a water inlet into the basin,

(b) a valve in said inlet having two orientations, a first orientation permitting flow of water from said inlet into said basin and a second orientation preventing flow of water from said inlet into said basin,

(c) a valve operator associated with said valve, said valve operator including a regulator having a flexible diaphragm, and including a linkage extending from said diaphragm and connected to said valve for operating said valve,

(e) an elongated air pressure tube located in the basin and disposed vertically, said tube having an open bottom and including at least one pressure relief opening in the length thereof for permitting selection of different water levels in the basin,

(f) means extending between said tube and said regulator for communicating air pressure from said tube to said regulator.

4,607,659

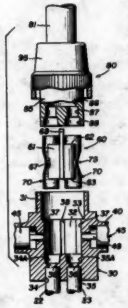
VALVE WITH RESILIENT TUBES HAVING CONSTRICTED PORTIONS

George S. Cole, 17 Mile Dr., Pebble Beach, Calif. 93953

Filed Aug. 12, 1985, Ser. No. 764,541

Int. Cl.[4] F16K *43/00, 11/18, 31/524*

U.S. Cl. 137—454.2 **20 Claims**



1. A valve for controlling flow from a pair of pressurized fluid supply conduits, said valve comprising: a support, a pair of spaced resilient tubes carried by said support and respectively communicating with the supply conduits, each of said tubes having two end portions and a neck portion and two tapered transition portions respectively connecting said end portions to said neck portion, the inner surfaces of said end portions and said neck portion, the being circularly cylindrical and the inner surfaces of said transition portions being substantially frusto conical such that when the tube is relaxed the internal diameter of said neck portion is substantially less than that of either of said end portions each of said tubes having a circular internal cross-sectional flow area along the entire length thereof to promote laminar flow and to minimize noise, the cross-sectional flow area of said neck portion being substantially less than that through either of said end portions in use, and control means on said support engageable with said neck portions of said tubes and movable between a fully open position wherein said tubes are relaxed and closed positions cooperating with said support to pinch said neck portions for varying the internal cross-sectional areas thereof.

4,607,660

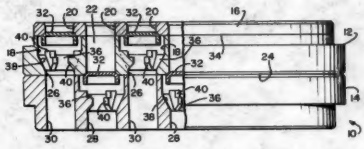
UNI-DIRECTIONAL-FLOW, FLUID VALVE ASSEMBLY

Robert A. Bennitt, Painted Post, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 13, 1985, Ser. No. 733,081

Int. Cl.[4] F16K *15/02*

U.S. Cl. 137—512.1 **14 Claims**



1. A substantially circular, uni-directional flow, fluid valve assembly, having a given diameter, comprising:

means defining pluralities of rows of separate, circular and walled valving chambers; wherein

each chamber of said rows thereof has a first port opening thereinto for admitting fluid therein, and a second port opening thereinto for discharging fluid therefrom;

each chamber further has, therewithin, a valving element movable to and from one of said ports, for occluding and exposing, respectively, said one port;

a cross-section taken fully along said given diameter of said assembly is of a given dimension, and bisects one of said rows of said valving chambers across the diameters of each of said chambers in said one row; and

the sum of the dimensions of said diameters of said chambers in said one row is greater than said given dimension.

4,607,661

CHECK VALUE

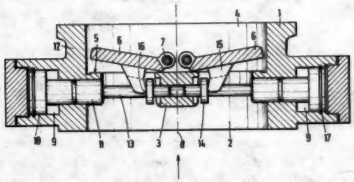
Lür Wessels, Stuhr, and Johannes Tetzner, Bremen, both of Fed. Rep. of Germany, assignors to GESTRA Aktiengesellschaft, Bremen, Fed. Rep. of Germany

Filed Apr. 22, 1985, Ser. No. 725,373

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417770; Feb. 13, 1985, 3504827

Int. Cl.[4] F16K *15/03, 47/00*

U.S. Cl. 137—512.1 **9 Claims**



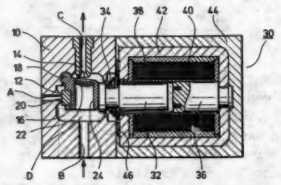
5. In a check valve having a valve casing with an inlet duct and an outlet duct, two sealing valves in the outlet duct pivotably supported therein at their adjacent edges, a casing bridge disposed upstream of said adjacent valve edges on the inlet side, at least two control means arranged on the bridge of said valve casing each being capable of a lifting movement and being responsive to inlet pressure within said inlet duct for acting on said valves, and two operating rods each operatively connected with one of said control means, said operating rods projecting into the interior of said valve casing and cooperating with the sealing valves at least over part of the path of the pivoting movement thereof, the improvement comprising said operating rods extending into the inlet duct of said valve casing substantially transversely to the longitudinal axis of said valve casing, and coupling means for translating motion arranged between each operating rod and associated sealing valve, one

element thereof being adapted for an arcuate motion and another element thereof being adapted for a lifting motion.

4,607,662
THREE-WAY CHANGE-OVER VALVE

Tomio Hama, and Kiyoyasu Yamazaki, both of Okaya, Japan, assignors to Nihon Pisuko Kabushiki Kaisha, Nagano, Japan

Continuation of Ser. No. 492,046, May 6, 1983, abandoned. This application Apr. 26, 1985, Ser. No. 727,915
Claims priority, application Japan, May 10, 1982, 57-78720
Int. Cl.[4] F16K *11/04*
U.S. Cl. 137—625.65 1 Claim



1. A three-way change-over valve comprising:

a valve box;

a fluid chamber being disposed within said valve box, said fluid chamber including at least a first, second, third and fourth wall, said first and second walls being substantially perpendicular with respect to each other, said third wall of said fluid chamber is positioned at approximately ninety agrees from said first wall;

an input port communication through said first wall of said fluid chamber;

an exhaust port communicating through said second wall of said fluid chamber;

an output portion communicating through said third wall of said fluid chamber;

said fourth wall including an aperture disposed therein;

a valve body operatively positioned within said fluid chamber for sequentially opening and closing said input port and said exhaust port;

a pivot axis affixed to said valve body and being positioned adjacent to said first and second walls;

an electromagnetic controlling mechanism for imparting movement to and for releasing said valve body for sequentially opening and closing said input port and said exhaust port, said electromagenetic controlling mechanism being affixed to said fourth wall;

said electromagnetic controlling mechanism includes a movable core operatively positioned for selectively entering through said aperture in said fourth wall and into said fluid chamber towards said first wall and for retracting from said fluid chamber; and

a biasing means operatively connected to said movable core for normally biasing said movable core into said fluid chamber, said biasing means is a spring;

said electromagnetic controlling mechanism being adapted to be energized for retracting said movable core from said fluid chamber;

said valve body being formed in the shape of approximately a cube and includes a hollow control portion in which an exhaust controlling valve is positioned;

said exhaust controlling valve is said valve body is positioned to cooperate with said exhaust port in said second wall of said fluid chamber; and

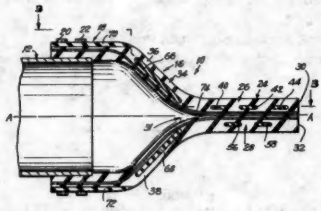
an input-controlling valve is fixed to said valve body and is positioned to cooperate with said input port communicating through said first wall of said fluid chamber;

wherein when said electromagnetic controlling mechanism is deenergized, said biasing means biases said movable core directly against said valve body and against said input port for closing said input port against the flow of fluid from the input port, and when said electromagnetic controlling mechanism is energized, said movable core is retracted from said fluid chamber against said biasing means to release said valve body from said input port and for enabling said input pressure to move said valve body for closing said exhaust port.

4,607,663
INVERSION-RESISTANT, READILY-OPENABLE TIDE GATE VALVE

Spiros G. Raftis, Pittsburgh, Pa., and George W. Merritt, Akron, Ohio, assignors to Red Valve Co., Inc., Carnegie, Pa.

Filed Jul. 12, 1985, Ser. No. 754,820
Int. Cl.[4] F16K *15/16*
U.S. Cl. 137—846 5 Claims



1. An inversion-resistant tide gate valve for sewage conduits, particular for large-sized storm sewer pipes, comprising:

(a) a sleeve bounding a longitudinally-extending flow-through passage for sewage fluids,

(b) said sleeve having an upstream fluid inlet end region mountable on a discharge end of a sewage conduit which is elongated along an axis of symmetry,

(c) said sleeve having a downstream fluid outlet end region which has an upper lip and a lower lip opposed to each other and symmetrically arranged relative to the axis, said lips being movable from a closed position in which the lips sealingly engage each other, to an open position in which the lips are located apart from each other in response to a pressure head within the passage and exerted in a direction downstream of the passage,

(d) said sleeve having a tapered intermediate region which has an upper wall and a lower wall symmetrically arranged relative to the axis, said upper and lower walls respectively merging, and being jointly movable, with the upper and lower lips,

(e) said sleeve being constituted, at least in part, of a flexible material,

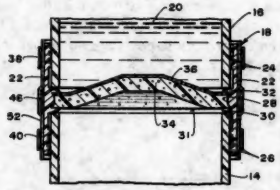
(f) a plurality of pads arranged along the upper and lower walls and lips of the sleeve, said pads being constituted of a material less flexible than the flexible material of the sleeve for imparting strength to the sleeve to prevent the sleeve from sagging and to prevent the lips from inverting in response to a back pressure exerted in a direction upstream of the passage, said pads being spaced apart from each other to bound therebetween flexible hinge regions at which the upper and lower walls and lips are bendable for imparting flexibility to the sleeve to enable the lips to readily move from the closed to the open position in response to the pressure head, first ones of the pads on the upper lip being staggered relative to second ones of the pads on the lower lip, third ones of the pads on the upper wall being symmetrically arranged relative to the axis with respect to fourth ones of the pads on the lower wall, said first, second, third and fourth ones of the pads being embedded in the flexible material of the sleeve, and an additional longitudinally-extending annular pad on the upstream fluid inlet end region for imparting additional strength to the sleeve to resist sagging of the same.

4,607,664

PLUMBING TEST PLUG APPARATUS

Joseph H. Carney, 13495 Meyer Rd., Whittier, Calif. 90605, and Rudy Lozano, 1537 Leanne Ter., Walnut, Calif. 91789

Filed Oct. 15, 1985, Ser. No. 787,152
Int. Cl.[4] F16K *17/36*
U.S. Cl. 138—89 10 Claims



1. A plug apparatus for temporarily blocking the discharge fluid flow path of a pipe system comprising:

a first pipe and a second pipe located in an in-line manner through which a fluid is to be conducted, both said first pipe and said second pipe having an open end, said open ends being located directly adjacent but spaced therefrom forming a gap;

a flexible walled sleeve exteriorly mounted on both said first and second pipes and extending across said gap, said sleeve having an exterior wall surface and an interior wall surface, means formed on said interior wall surface for securing a plug;

said plug locatable within said sleeve, said plug completely blocking said flow path between said first and second pipes said plug being destructable, said plug being held in position by said hiatus means;

a first clamping means mounted on said exterior surface of said sleeve for securing said sleeve onto said first pipe and said second pipe in a fluid-tight manner; and

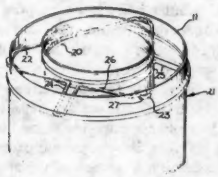
a second clamping means mounted on said exterior surface of said sleeve for applying a force to said plug.

4,607,665

PIPE SPACER

Samuel B. Williams, Culver City, Calif., assignor to Marco Manufacturing, Inc., Lynwood, Calif.

Filed May 20, 1985, Ser. No. 735,681
Int. Cl.[4] F16L *9/02*
U.S. Cl. 138—148 18 Claims



8. A conduit for conveying and isolating a fluid flow, comprising:

a first outer cylinder;

a second inner cylinder for containing said fluid flow, said second pipe being disposed within said first outer cylinder;

a spacer formed from a rod having a plurality of predetermined bends, said rod forming a closed perimeter around said second cylinder and contacting the inner wall of said first cylinder, such that said second cylinder is rigidly held at said predetermined location within said first cylinder, said rod having a shape including a plurality of apices, wherein said apices are for coupling said spacer to said first cylinder and portions of said rod between said apices for coupling said spacer to said second cylinder, such that said spacer clamps said second cylinder at a predetermined position within said first cylinder;

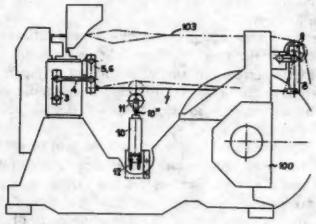
said second cylinder including a plurality of ridges on an exterior surface, such that portion portions of said rod between said apices couples to said second cylinder between said ridges.

4,607,666

APPARATUS FOR CONTROLLING THE WARP THREAD TENSION BY POSITIONAL DISPLACEMENT OF A BACK REST ON A LOOM

Rudolf Zwiener, Arbon, Switzerland; Ernst Mathis, Hohenems, Austria; Theo Thalmann, St. Gallen, Switzerland, and Siegfried Röhrich, Götzis, Austria, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Oct. 10, 1985, Ser. No. 786,107
Claims priority, application Switzerland, Oct. 16, 1984, 4945/84
Int. Cl.[4] D03D *49/12*
U.S. Cl. 139—115 16 Claims



1. An apparatus for controlling the warp thread tension in a weaving machine containing a back rest, said apparatus comprising:

at least one cam disc operatively connected with said weaving machine;

at least one swivelling lever mechanism controlled by said at least one cam disc;

said back rest containing a shaft;

said at least one swivelling lever mechanism encompassing at least one rocking lever carrying said shaft of said back rest;

said at least one swivelling lever mechanism and said at least one cam disc cooperating in order to positionally displace said back rest for warp thread tensioning during normal operation of said weaving machine;

means for causing an additional positional displacement of said back rest in order to generate an additional warp thread tensioning during the start-up operation of said weaving machine;

said means for generating said additional positional displacement of said back rest including at least one actuating means;

said at least one swivelling lever mechanism further encompassing a connecting element which serves for adjusting a relative distance between said at least one cam disc and said at least one rocking lever which carries said shaft of said back rest;

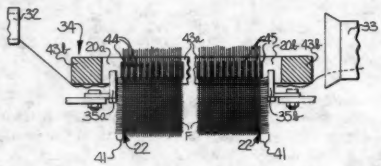
said at least one connecting element having a variable relative length determining said relative distance between said at least one cam disc and said at least one rocking lever which carries said shaft of said back rest; and

said at least one actuating means being temporarily operable in order to vary said relative length of said at least one connecting element.

4,607,667
APPARATUS FOR SEVERING INSERTED FILLING YARNS

Carroll A. Gibson, Rocky Mount, N.C., assignor to Texfi Industries, Inc., Rocky Mount, N.C.

Filed Sep. 4, 1984, Ser. No. 646,856
Int. Cl.[4] D03D *47/34*
U.S. Cl. 139—429 7 Claims



1. In a loom of the type wherein the filling yarn is inserted into the warp shed in the form of cut lengths and wherein a reed serves for beating-up the inserted filling yarn into the fabric at the fell of the cloth, the combination therewith of improved means for severing the terminal ends of filling yarns projecting outwardly from at least one of the selvages of the fabric being woven;

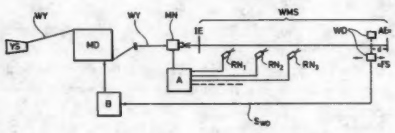
said means comprising a cutter positioned adjacent at least one end of the reed, said reed having a relatively wide widthwise extending opening therein adjacent the end where said cutter is positioned, said opening being of a width substantially greater than the dent spacing of the reed; and

means mounting said cutter relative to said opening so that upon the reed being reciprocated in beating-up the filling yarn into the fabric, said cutter has yarn severing portions that are positioned in said opening in the reed during the effecting of severing of the terminal ends of the filling yarns so that the terminal ends of the filling yarn are severed within about 1/32" of the selvage of the fabric being woven.

4,607,668
WEFT YARN STORING, FEEDING AND MEASURING DEVICE FOR JET WEAVING MACHINES

Lars H. G. Tholander, Huskvarna, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

PCT No. PCT/SE83/00448, § 371 Date Aug. 8, 1984, § 102(e) Date Aug. 8, 1984, PCT Pub. No. WO84/02362, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 12, 1983, Ser. No. 641,898
Claims priority, application Sweden, Dec. 10, 1982, 8207096
Int. Cl.[4] D03D *47/36*; B65H *51/00*
U.S. Cl. 139—452 3 Claims



2. A yarn storing, feeding and measuring device for jet weaving machines, including a storage drum onto which an intermediate weft yarn store can be wound by a winding-on member and from which the weft yarn can be withdrawn spiralling around the withdrawal end of the storage drum, at least one yarn stopping device and a control unit for transmitting an actuating signal to said stopping device when a weft yarn length corresponding to the length of a shed of the woven fabric in the machine has been withdrawn from the storage drum, comprising:

said control unit being electrically connected to a yarn sensing detector positioned adjacent the arrival end of the shed for the weft yarn at a predetermined distance from said arrival end; and

said control unit transmitting the actuation signal to said yarn stopping device when it receives a signal from the yarn sensing detector representing the detection of the weft yarn;

wherein said yarn sensing detector is displaceable in the length direction of the shed for adjusting the point of time when the control unit receives said signal from the yarn sensing detector.

4,607,669
REPAIR TOOL FOR DEFECTIVE WRAPPED WIRE ELECTRICAL CONNECTIONS

Nicholas Bozine, Philadelphia, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 26, 1984, Ser. No. 634,701
Int. Cl.[4] B21F *15/04*
U.S. Cl. 140—124 4 Claims

1. A repair tool for correcting a pigtail formed in the last of a plurality of turns of wire wrapped upon a wiring post of rectangular cross section comprising:

an elongated tubular body having a bore of predetermined diameter for accommodating the maximum cross sectional dimension of said wiring post but not including the turns of wire wrapped thereon, a longitudinal slot formed in said body adjacent the forward extremity thereof, said slot extending from the outer surface of said body to said bore,

a cylindrical member immovably affixed within said slot and providing a finger-like projection extending beyond said forward extremity, a portion of the surface of said cylindrical member being disposed on the periphery of said bore,

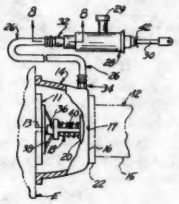
whereby the disposition of said body over said wiring post causes said forward extremity to rest upon said plurality of turns of wire and said finger-like projection to contact the outer surface of said pigtail, the respective longitudinal center lines of said body and said wiring post being parallel but spaced apart from each other, whereupon

the rotation of said body about its longitudinal axis causes the periphery of said bore to pivot on successive corners of said wiring post, thereby effecting the wiping down of said pigtail toward said wiring post by said finger-like projection.

4,607,670
MODULAR PREFILLED HYDRAULIC CONTROL APPARATUS

David J. Compton, Troy; Richard A. Nix, Utica, and Keith V. Leigh-Monstevens, Troy, all of Mich., assignors to Automotive Products plc, Warwickshire, England

Continuation-in-part of Ser. No. 555,667, Nov. 28, 1983. This application Apr. 30, 1984, Ser. No. 607,020
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—1 19 Claims



1. A method of prefilling a hydraulic apparatus prior to shipment of said hydraulic apparatus to a user, said hydraulic apparatus comprising a master cylinder, a remote slave cylinder and a conduit connecting said master cylinder to said slave cylinder, said master cylinder, said slave cylinder and said conduit being supplied in the form of at least two separate modular units each capable of being coupled to the other by a leakproof connector having two interengageable complementary members having each a port providing fluid communication between said members when coupled together and means closing said ports when uncoupled, said method comprising separately filling with hydraulic fluid each modular unit of said hydraulic apparatus provided with one of said complementary members, and providing said connector complementary members with one-way interlocking means preventing disconnect of said members after said members have been coupled by the user.

4,607,671
RECONSTITUTION DEVICE

William R. Aalto, Spring Grove, and James L. Sertic, Lindenhurst, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 21, 1984, Ser. No. 642,908
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—329 14 Claims

1. A device for reconstituting a drug in a drug vial, the vial having a mouth with a malleable band thereabout, said device comprising:

A. a sheath including:

(i) a substantially circular base,

(ii) a semi-flexible skirt depending from said base, said skirt including a free end, a substantially cylindrical inner surface and an outer surface and

(iii) a plurality of inwardly projecting bumps intermittently spaced about said inner surface, said bumps all being disposed a substantially equal distance from said base, said distance being substantially equal to the width of the malleable band,

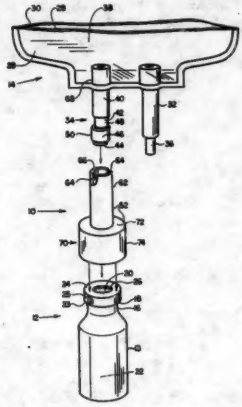
(iv) wherein each of said bumps includes a sloped side facing said free end;

B. means for entering the drug vial, mounted to said base and disposed within the cylindrical volume defined by said skirt;

C. means for entering the interior of a second container, connected to said base; and

D. flow path means for placing the interiors of the drug vial and the second container in open communication;

E. whereby upon installation of said sheath about the mouth of the drug vial, said bumps deform the sidewall of the malleable band and create a stop against the underside of

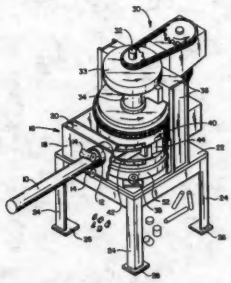


the malleable band, making difficult the inadvertent disconnection of said device and the vial.

4,607,672
MULTI-PRODUCT WOOD PROCESSOR

Vernon W. Kangas, Calumet; Roy J. Kangas, Dodgeville, and Edsel D. Matson, Hancock, all of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 30, 1985, Ser. No. 696,566
Int. Cl.[4] B27C *9/00, 1/00*
U.S. Cl. 144—2 R 12 Claims



1. An apparatus for reducing the size of wood pieces comprising:

a hollow drum defined by a wall;

means to rotate said drum;

means on said drum defining an aperture in said wall, wherein a first segment of said aperture defines an area large enough to permit a wood piece to extend therethrough into the interior of said drum, and wherein a second segment of said aperture includes a blade to cut into said wood piece as said drum rotates.

4,607,673

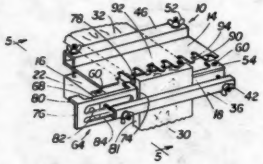
DOVETAIL FIXTURE

Wilfred M. McCord, Jr., Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.

Filed Feb. 1, 1985, Ser. No. 697,254

Int. Cl.[4] B27F *1/08*

U.S. Cl. 144—144.5 R **19 Claims**



5. A dovetail fixture for use with a router having a tool bit comprising:

(a) base having a generally horizontal, planar top surface, and a generally vertical, planar front surface substantially perpendicular to said top surface;

(b) means adjacent to said front surface for clamping a first workpiece to the base front surface;

(c) means adjacent to said top surface for clamping a second workpiece to the bases top surface; and

(d) a generally flat template above said base having at least one of its edges formed with a plurality of spaced apart cutting guide fingers, with the space between adjacent ones of said fingers defining blind-ended cutting tool guide slot and each said slot having a step formed at its blind end, wherein said step defines an offset area deeper than the non-offset area of each said slot and said offset area is located off center of each said slot toward one side of said slot;

(e) said template being adapted to be located over the second workpiece with the distal ends of said fingers located over the first workpiece and the stepped blind end of each said slot located over the second workpiece.

4,607,674

COVER SYSTEM

Peggy Noble, 3604 Forest Hill Rd., Baltimore, Md. 21207

Filed Dec. 3, 1984, Ser. No. 677,395

Int. Cl.[4] B65D *11/00*

U.S. Cl. 150—52 R **18 Claims**

1. A cover system adapted to contain a toilet roll comprising:

(a) a body member defining an internal chamber having a volumetric contour adapted for insert of said toilet roll;

(b) at least one appendage member having an extended length and fixedly secured to said body member, said appendage member including an outer appendage layer member forming an enclosed appendage chamber and a resilient material composition inserted within said enclosed appendage chamber;

(c) a head member releasably secured to said body member; and,

(d) means for varying and maintaining a positional contour of said appendage member substantially throughout said extended length of said appendage member, said means for varying and maintaining said positional contour passing through at least a portion of said resilient material composition.

4,607,675

LUBRICANT FOR RUN-FLAT TIRE APPLICATION AND RUN-FLAT TIRE THEREWITH

George P. Patitsas, Kent, and Herbert N. Kagarise, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 6, 1985, Ser. No. 730,611

Int. Cl.[4] C10M *3/18, 5/02, 7/08;* **B60C** *5/00*

U.S. Cl. 152—521 **11 Claims**

1. A lubricant composition which comprises a composite mixture of (A) about 2 to about 60 parts of a fatty acid having from 12 to 24 carbon atoms, (B) about 2 to about 20 parts by weight of a polytetrafluoroethylene fluorocarbon resin powder, (C) about 10 to about 20 parts pyrogenic amorphous silica powder and (D) about 40 to about 100 parts of a carrier selected from at least one of water, polypropylene ether glycol and/or triol having a molecular weight in the range of about 400 to about 3500, polyethylene ether polyol and/or triol having a molecular weight in the range of about 400 to about 3800, and polyols containing 2 to 4 hydroxyl groups with a molecular weight of less than 400.

4,607,676

ROLL-UP AWNING CONSTRUCTION

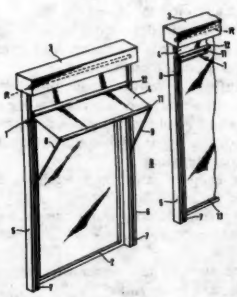
Ulrich Clauss, Bissingen, Fed. Rep. of Germany, assignor to Claus Markisen, Bissingen-Ochsenwang, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,323

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344359

Int. Cl.[4] E04F *10/06*

U.S. Cl. 160—74 **17 Claims**



1. Awning construction having a wind-up roller (R);

an awning web (4) secured to the roller at one end of the web;

a cross rail (11) secured to the awning web (4) at the other end of the awning web;

a pair of parallel guide rails (5, 6) secured to a wall of a building (B) adjacent an opening to be shaded by the awning;

two arms (8, 9) having one end, each, slidable longitudinally on the guide rails (5, 6) and further pivotably connected thereto for pivoting movement from an upper, or rest position to a pivoted position, the other end of each of the two arms being connected to the cross rail (11);

first engagement element means (38) located in horizontal alignment with respect to the guide rails;

second engagement element means (42) located on the arms adjacent said one end of the arms, engageable with the first engagement element means;

wherein the first engagement element means (38) comprises at least one first projecting element (41*a*, 41*b*) positioned in the path of movement of the second engagement element means (42);

the second engagement element means comprises at least two second spaced projecting elements (43*a*, 43*b*), the spacing of the second projecting elements permitting said first projecting element (41*a*, 41*b*) of the first engagement elements means (38) to fit between the spaced two second projecting elements (43*a*, 43*b*);

a cam land (44) is provided, disposed below the first engagement element means (38); and

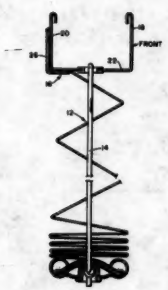
wherein a cam track (45) is provided, disposed on the underside of the associated arm (8, 9) which cooperates with the cam land in such a manner that as the substantially vertically downwardly folded arm (8, 9) slides upwardly, it is pivoted in the direction of the rest position upon engaging the cam land on the first engagement element means (38).

4,607,677

MOUNTING FOR BLIND

Paul E. Comeau, Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Filed Aug. 23, 1984, Ser. No. 643,821
Int. Cl.[4] E06B *9/388*; A47H *1/144*
U.S. Cl. 160—84 R 10 Claims



9. A retractable pleated blind, comprising:

a sheet of horizontally pleated blind material having an upper margin;

a headrail for supporting the sheet of horizontally pleated material comprising a bottom wall;

means for securing the upper margin of the sheet of horizontally pleated material to the headrail such that the sheet of horizontally pleated material is suspended from a center portion of the bottom wall

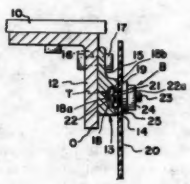
end brackets for supporting ends of said headrail, each bracket comprising a rear wall adapted for securement to a support, a front wall for holding the headrail in the bracket, a bottom flange extending forwardly from the rear wall, and a bottom flange extending rearwardly from the front wall, said flanges arranged so as to support the headrail such that the sheet of horizontally pleated material extends between the two flanges.

4,607,678

FLEXIBLE STRIP DOOR ASSEMBLIES

Ronald C. Pomaville, and Jack Landane, both of Bay City, Mich., assignors to Easy Handling Co., Inc., Burton, Mich.

Filed Oct. 15, 1984, Ser. No. 660,693
Int. Cl.[4] A47H *13/01, 23/05*
U.S. Cl. 160—332 3 Claims



1. In a flexible strip closure assembly for covering a door or like opening including, a longitudinally extending header adapted to be secured across the upper end of the door opening and a plurality of relatively elongate flexible strips of heavy gauge plastic or like material of relatively narrow width compared to their length hung from the header in vertical edge overlapped relationship such as to form a penetrable closure for the opening, the improvement wherein:

a. the header comprises an extrusion having a longitudinally continuous fixed flat front wall bearing surface and a longitudinally extending, longitudinally continuous, open-ended T-slot, defined by an inset enlarged slot portion spaced rearwardly from the front bearing surface and a reduced size slot portion opening through said bearing surface and extending rearwardly therefrom to said enlarged slot portion, the enlarged portion of the T-slot having a flat fixed, longitudinally continuous marginal wall bearing surface parallel to the front wall bearing surface;

b. the individual strips at their upper ends have a generally central opening therethrough opposite the reduced size slot portion;

c. an individual clamp for each strip, independent from said header and movable with respect thereto when unclamped, extends through the opening in the strip, and has an individual enlarged head received in the enlarged slot portion rearward of the said marginal wall bearing surface, with a shank extending out said reduced slot portion to pass through the opening in each strip, the said head having a flat front wall surface mated to the flat marginal wall bearing surface to clamp thereto;

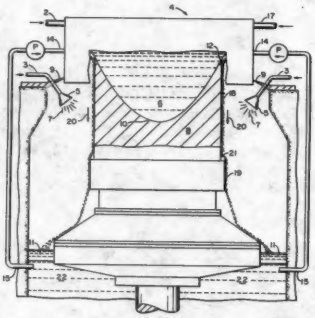
d. a releasable securing means is on each shank, forwardly of each strip and bearing on the strip, to secure the individual strip in vertical position with its upper end pressed against said front wall bearing surface on the header and

e. means spaced from said T-slot for securing the header in fixed position across the opening.

4,607,679
PROVIDING OLIGOMER MOISTURE BARRIER IN DIRECT CHILL CASTING OF ALUMINUM-LITHIUM ALLOY

Mei-Yuan Tsai; John E. Jacoby, and Joseph T. Laemmle, all of Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 6, 1984, Ser. No. 679,135
Int. Cl.[4] B22D *11/04, 11/07*
U.S. Cl. 164—5 **5 Claims**



1. A process for continuously casting an aluminum alloy containing more than about 1.5% by weight lithium into a solidified ingot having a smallest transverse dimension greater than about 6 inches, comprising:
initiating solidification of aluminum-lithium alloy into an ingot in a continuous casting mold;
direct chill cooling said ingot with a coolant comprising an organic coolant and a moisture content less than an amount predetermined to avoid explosions, said coolant being applied to the surface of said ingot and separating therefrom:
collecting said coolant separating from said ingot in a collection pool:
providing a moisture barrier liquid containing alpha-olefin oligomer to reduce moisture absorption in the coolant; and
recirculating said coolant from the collection pool for further direct chill cooling.

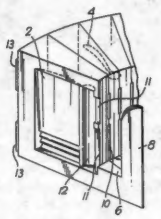
4,607,680
METHOD AND MOULD FOR CASTING METAL ARTICLES

David Mills; Alan D. Kington, and Rodney J. Close, all of Bristol, England, assignors to Rolls-Royce Limited, London, England

Division of Ser. No. 365,047, Apr. 2, 1982, Pat. No. 4,516,621. This application Feb. 28, 1985, Ser. No. 706,599
Claims priority, application United Kingdom, Apr. 13, 1981, 8111519
The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.
Int. Cl.[4] B22C *9/08;* **B22D** *23/00*
U.S. Cl. 164—134 **6 Claims**

1. A method of casting comprising the steps of:
making a mould having a mould cavity therein and including at least one elongated slit integrally formed in said mould, wherein the width of said at least one slit lies in the range 1.25 mm to 0.25 mm and said at least one slit communicates between the mould cavity and the exterior of the mould,
providing a runner passage connected to the mould and communicating with the at least one slit, and
providing a supplu of liquid metal into the runner passage whereby the liquid metal enters the mould cavity only through said at least on slit.

5. A moulding apparatus comprising:
a mould having a mould cavity therein and further having at least one elongated slit integrally formed therein the width of which lies in the range 1.25 mm to 0.25 mm, said at least

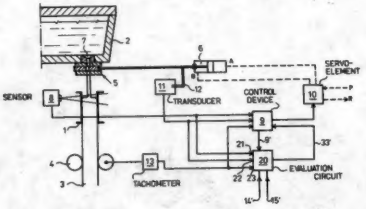


one elongated slit communicating between said mould cavity and an exterior of said mould;
a runner passage connected to the mould and communicating with said at least one slit for providing a supply of liquid metal to the mould cavity through said at least one slit.

4,607,681
PROCESS AND APPARATUS FOR CONTROLLING A CONTINUOUS CASTING PLANT

Bernhard Tinnes, Zollikerberg, Switzerland, and Heinz Kreuzberg, Bernau, Fed. Rep. of Germany, assignors to Metacon AG, Zurich, Switzerland

Filed Mar. 27, 1984, Ser. No. 593,945
Claims priority, application Switzerland, Mar. 29, 1983, 1724/83
Int. Cl.[4] B22D *11/18, 11/20*
U.S. Cl. 164—453 **22 Claims**



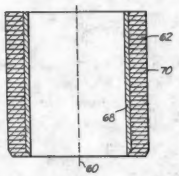
1. A process for detecting break-out in a continuous casting plant having a mold wherein the quantity of molten material being supplied to said mold is controlled to a predetermined level, comprising the steps of:
monitoring the change in the flow rate of molten material being supplied, said monitoring being carried out prior to the molten metal reaching the mold;
determining the time behavior of flow rate increases detected in said monitoring step; and
producing a break-out signal when the flow rate of said molten material increases at more than a predetermined rate.

4,607,682

MOLD FOR USE IN METAL OR METAL ALLOY CASTING SYSTEMS

Jonathan A. Dantzig, Hamden, and Derek E. Tyler, Cheshire, both of Conn., assignors to Alumax, Inc., San Mateo, Calif.

Division of Ser. No. 289,572, Aug. 3, 1981, Pat. No. 4,457,354.
This application Mar. 2, 1984, Ser. No. 585,416
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—418 10 Claims



3. A mold for containing molten metal or metal alloy in a casting system, said mold being adapted to have electrical currents induced therein in a first direction as the result of electrically mixing said molten metal, said mold comprising:

a plurality of stacked laminations formed from a metal or metal alloy material;

a plurality of means comprising electrical insulating material for electrically insulating said laminations from each other, said insulating material being oriented so that its smaller dimension is substantially transverse to said first direction for minimizing the path lengths of at least some of said induced currents, whereby magnetic induction losses caused by said mold are substantially reduced; and

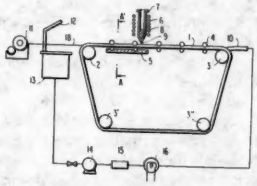
core sleeve means for thermally contacting said molten metal or metal alloy affixed to said stack of laminations.

4,607,683

METHOD OF MANUFACTURING THIN METAL WIRE

Tatsuo Hamashima, Osaka; Hisayasu Tsubata, and Michiaki Hagiwara, both of Kyoto, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Mar. 3, 1983, Ser. No. 471,600
Claims priority, application Japan, Mar. 3, 1982, 57-34490
Int. Cl.[4] B22D *11/06*
U.S. Cl. 164—463 20 Claims



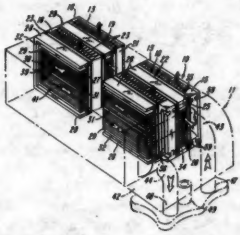
1. A method for the manufacture of a thin metal wire having a circular cross section, comprising the steps of spouting molten metal through a spinning nozzle and bringing the resultant flow of molten metal into contact with a layer of liquid cooling medium forming a liquid coolant run within an exterior groove on an upper surface portion of a moving endless conveyor belt thereby quenching and solidifying said flow of molten metal.

4,607,684

LEAK PROTECTED HEAT EXCHANGER

Maxwell R. Wiard, Vandalia, and Kenneth L. Michael, Dayton, both of Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed Jan. 18, 1985, Ser. No. 692,762
Int. Cl.[4] F28F *11/00*
U.S. Cl. 165—70 11 Claims



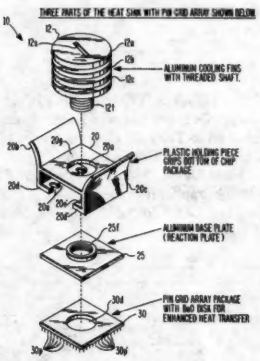
10. A leak protected heat exchanger, including an assembly of stacked plates and spacer elements defining layered flow passes for first and second fluids to pass in heat transfer relation to one another, and defining between adjacent first and second fluid flow passes collection chambers for fluids leaked from said fluid flow passes through plate elements separating adjacent fluid flow passes from a collection chamber, the heat exchanger having an exterior face through which a first flowing fluid has access to first fluid flow passes, and means for venting said collection chambers through said exterior face, the access to said first fluid flow passes and said venting means being separated so that manifolding means applied to said face may provide for separate communication with said first fluid flow passes and with said venting means.

4,607,685

HEAT SINK FOR INTEGRATED CIRCUIT PACKAGE

John W. Mitchell, Jr., Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 6, 1984, Ser. No. 628,225
Int. Cl.[4] H01L *23/40*
U.S. Cl. 165—80.3 8 Claims


THREE PARTS OF THE HEAT SINK WITH PIN GRID ARRAY SHOWN BELOW
ALUMINUM COOLING FINS WITH THREADED SHAFT
PLASTIC HOLDING PIECE GRIPS BOTTOM OF CHIP PACKAGE
ALUMINUM BASE PLATE (REACTION PLATE)
PIN GRID ARRAY PACKAGE WITH BeO DISK FOR ENHANCED HEAT TRANSFER

1. A heat exchange device for an IC pin chip package comprising:

(a) gripping means for attachment to said chip package and having a central aperture, wherein said gripping means includes:

(a1) a flexible planar area around said central aperture;
(a2) first and second legs extending at right angles to said planar area, said legs acting to grip said chip package;
(b) cover unit means including:
(b1) a beryllium oxide disk connected to the top of said chip package;
(b2) a metallic base plate for covering the top of said chip package, and having a threaded central aperture;
(c) metallic fin means having a threaded extension cylinder for insertion through said gripping means and said metallic base plate for contact with said beryllium oxide disk.

4,607,686

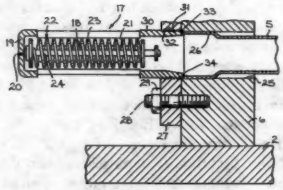
BASKET RETAINER FOR HEAT EXCHANGER TUBE CLEANING ELEMENT

Walter J. Baron, Milwaukee, and Laird C. Cleaver, Mequon, both of Wis., assignors to Water Services of America, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 505,077, Jun. 16, 1983, Pat. No. 4,552,207, which is a continuation of Ser. No. 350,286, Feb. 18, 1982, Pat. No. 4,398,592. This application Jun. 26, 1984, Ser. No. 624,620

Int. Cl.⁴ F28G *1/12, 15/02*

U.S. Cl. 165—95 **13 Claims**



1. In combination in a heat exchanger having a housing, and having a plurality of longitudinally extending fluid flow tubes disposed within said housing, and having tube sheets disposed within said housing and with said tube sheets having openings in communication with the ends of said tubes, and further having longitudinally extending baskets for receiving shuttling tube cleaning elements mounted in engagement with the ends of said tubes:
(a) a retaining plate fixedly disposed adjacent to the outer face of a said tube sheet,
(b) and means, including said retaining plate, mounting a said basket in fixed relationship to said tube sheet and to an end of a said tube.

4,607,687

HEAT STORAGE DEVICE

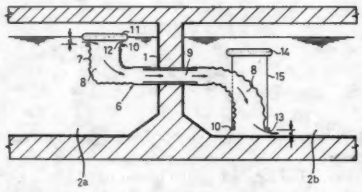
Shumpei Ohara; Noriyasu Sagara; Hiroo Izumiyama, and Yoshinobu Arai, all of Tokyo, Japan, assignors to Kajima Kenectus Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1984, Ser. No. 656,511

Claims priority, application Japan, Oct. 4, 1983, 58-185510

Int. Cl.⁴ F28D *21/00*; F24J *3/02*

U.S. Cl. 165—104.19 **1 Claim**



1. In a liquid-filled heat storage device which is divided by partition walls into a plurality of sub-tanks connected to each other in series, the improvement comprising:
adjacent pairs of said sub-tanks being communicated with each other by a communication passage penetrating the partition wall defining said adjacent sub-tanks, said communication passage having one end open to an upper part of the space in one of said adjacent sub-tanks and the other end open to a lower part of the space in the other sub-tank at a predetermined depth position;
a buoy floating on the surface of said liquid in said one sub-tank;
a portion of said communication passage including a flexible member with an open end suspended from said buoy positioned a predetermined constant distance beneath the surface of said liquid; and
a portion of the communication passage including a flexible member with an open end anchored to the bottom of said other sub-tank and positioned a predetermined constant distance above said bottom.

4,607,688

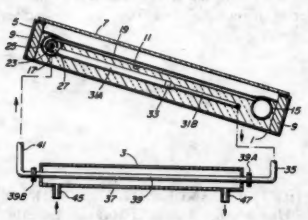
AUTOGENOUS SOLAR WATER HEATER

Wilfred B. Sorensen, 2, Cataraqui St., Kingston, Ontario, Canada (K7K 1Z7)

Filed Oct. 11, 1985, Ser. No. 786,535

Int. Cl.⁴ F28D *15/02*

U.S. Cl. 165—104.22 **3 Claims**



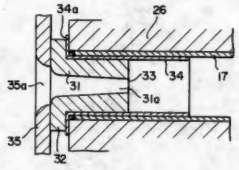
1. A bubble-pump system comprising a heated tubular conduit disposed at a first higher elevation and extending upwardly from a lower input end to an upper output end, a vapour/liquid separator connected to said upper end, condensing means arranged to utilize a cooling medium to cool by indirect contact only vapour separated in the separator, an indirect heat transfer heat exchanger disposed at a second lower elevation, first pipe means arranged to supply both separated liquid and condensate from the vapour to the heat exchanger, second pipe means arranged to supply that separated liquid and condensate, after cooling in the heat exchanger, to the condensing means as said cooling medium, and third pipe means arranged to convey said cooling medium from the condensing means to said lower input end of the tubular conduit; wherein the vapour/liquid separator is in the form of a horizontally extending cylinder, the heated tubular conduit is arranged to discharge a mixture of liquid and vapour substantially tangentially into the cylinder at or near its upper level, the condensing means extending axially of the separator, and a splash guard is interposed between the condensing means and the cylinder and is so shaped and positioned as to prevent liquid discharged by the heated tubular conduit from contacting the condensing means.

4,607,689

REHEATING DEVICE OF STEAM POWER PLANT

Yoshio Mochida, Ebina; Toshiaki Ozeki, Yokohama; Kenji Satoh, Yokohama, and Yoshitaka Yuasa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 23, 1983, Ser. No. 564,678
Claims priority, application Japan, Dec. 27, 1982, 57-232337
Int. Cl.[4] F28B *1/00*
U.S. Cl. 165—110 1 Claim



1. In a steam reheating device for a steam power plant of the type comprising a number of heat-exchanger tubes bent into U shape through which heating steam is passed to reheat steam flowing outside of said heat-exchanger tubes, a tube plate having holes for tightly receiving upstream and downstream ends of the U-shaped heat-exchanger tubes, and a header portion separated into a high-temperature chamber and a low-temperature chamber connected to the upstream ends and the downsteam ends of the heat-exchanger tubes, respectively, the improvement comprising:

corrosion preventing insert pipes each having an integrally formed flange portion and inserted detachably into an upstream end portion of each of said heat-exchanger tubes so that said flange portion abuts against said tube plate;

nozzle members each having a length shorter than that of said insert pipe and also having a flange portion, said nozzle member being inserted into said insert pipe until said flange poriton of said nozzle member abuts against said flange portion of said insert pipe, the configuration of said nozzle member being differentiated depending on in which of said heat-exchanger tubes the nozzle member is received; and

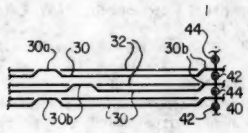
a bellmouth plate provided with a number of bellmouth-shaped holes and secured detachably to said tube plate such that said bellmouth-shaped holes are aligned with upstream end openings of said nozzle members in a streamlined manner and such that said flange portions of said insert pipes and said nozzle members are both firmly seized between said bellmouth plate and said tube plate.

4,607,690

TUBE AND SUPPORT SYSTEM FOR A HEAT EXCHANGER

Venkatraman Seshamani, Gillete, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 29, 1985, Ser. No. 802,913
Int. Cl.[4] F22B *37/20*; F28D *7/08*; F28F *9/26*
U.S. Cl. 165—145 3 Claims



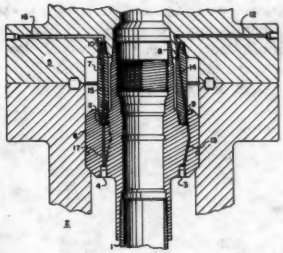
1. A tube and support system for a heat exchanger comprising a header, a first series of spaced tubes extending from one side of the header, a second series of spaced tubes extending from the other side of the header, each of the tubes extending in a serpentine pattern with the tubes of said first series being offset from the tubes of said second series, each tube in one of said series being bent in a manner to extend in a same plane as said other series of tubes, and a support member extending between said bent portions of said one series of tubes and corresponding portions of said other series of tubes.

4,607,691

NON-ORIENTING, MULTIPLE PORTED, CYLINDRICAL PRESSURE TRANSFER DEVICE

Charles D. Bridges, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 6, 1984, Ser. No. 628,671
Int. Cl.[4] E21B *33/03*
U.S. Cl. 166—88 4 Claims



1. A system for conducting a fluid pressure through bonnet and hanger supports for a tubing in well bore, including,

a tubing bonnet at the top of the well,

a hanger arranged to support the well tubing,

at least one conduit formed through the bonnet and the hanger,

a source of fluid pressure connected to the upper end of the conduit through the tubing bonnet,

a cylindrical sleeve captured coaxially between the production passageways of the tubing bonnet and hanger,

a first circular groove formed in the upper end of the sleeve to communicate with the lower end of the conduit formed through the bonnet,

a second circular groove formed in the lower end of the sleeve to communicate with the upper end of the conduit formed through the tubing hanger,

a drilled hole formed in the wall of the sleeve communicating the upper and lower circular grooves,

and tubing extended from the hanger conduit to operate downhole structure with the fluid pressure.

4,607,692

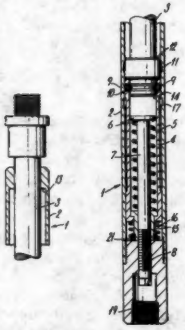
WIRELINE JAR

Klaas Zwart, Unit 4, Harlaw Centre, Howe Moss Crescent, Kirkhill Industrial Estate, Dyce, Aberdeen, Scotland

Filed Dec. 20, 1984, Ser. No. 683,810
Claims priority, application United Kingdom, Dec. 21, 1983, 8333957
Int. Cl.[4] E21B *4/06*, *31/107*
U.S. Cl. 166—178 13 Claims

1. In an upstroke mechanically operated wireline jar for downhole operations in oil wells and similar installations comprising a hollow casing having an internal downwardly facing shoulder defining anvil means, a first rod which is slidable axially in said casing the upper end of said rod projecting from the casing and having means for connecting the jar to a wireline, said rod bearing hammer means, in said casing, which is adapted to strike the said anvil means on an upward stoke of the rod, first resilient biasing means within said casing acting

between said rod and said casing so as to resist initial upward displacement of said rod from a rest position defined by the said first resilient biasing means, said displacement being caused as a consequence of tension in the wireline, and an intermediate coupling member within said casing connecting said first rod and said biasing means and including tripping means for abruptly disconnecting said biasing means from said rod upon a predetermined upward displacement of the rod, whereby upon said disconnection the force on said rod caused by the tension in the wireline accelerates its upward movement causing the hammer means to impact the anvil means, resetting of the jar being carried out by means of a downward face applied by the rod on said intermediate coupling member against an upwardly biasing means, the improvement comprising a sleeve which is slidingly supported in said casing, said sleeve being adapted to receive the end of the said first rod in its upper end, said sleeve further defining through-wall apertures in its upper end and an internal shoulder at its lower end and said jar comprising a second upstanding coaxially disposed rod within said casing, said second rod having an upper first end within said sleeve defining a shoulder below and adjacent to said first rod and a second lower end fixedly mounted on said casing, said first resilient biasing means being supported



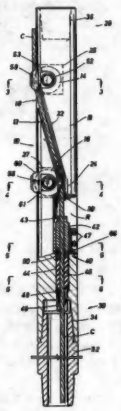
coaxially on said second rod between the internal shoulder of the sleeve and the shoulder on said second rod, said through-wall apertures containing coupling means, said coupling means simultaneously physically engaging the internal walls of the casing and a respective bevelled circumferential groove in the first rod, the internal wall of said casing furthermore defining at least two axially spaced apart circumferential bevelled slots disposed along the path of displacement of the sleeve, so that on upward displacement of the first rod in the preset condition of the jar through said predetermined displacement, the sleeve is likewise displaced until the coupling means enters the uppermost slot in the casing and releases the first rod from the said sleeve, the latter being then returned by said first resilient biasing means to its initial location, corresponding to the unstressed condition of the wireline, and when the first rod is displaced downwards, after tripping, by means of a downward movement of the wireline, the first rod enters the sleeve, engages the coupling means, and drives the sleeve downwards until said coupling means enters the lower said slot in the internal wall of the casing, so as to temporarily secure the sleeve to the casing whilst further downward movement of the first rod occurs, thereby permitting re-entry of the coupling means in the groove of the first rod and re-engagement of the latter with the said sleeve.

4,607,693

SIDE-ENTRY SUB

Neil W. Richardson, Lafayette, La., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Feb. 11, 1985, Ser. No. 700,207
Int. Cl.[4] E21B *17/00*
U.S. Cl. 166—242 **14 Claims**



1. In a side entry sub having a body connectable in a pipe string, said sub having a longitudinal fluid passage through said body for drilling fluid communication between upper and lower pipe strings when connected to said sub and having a stripping element disposed in a stripping passage in said sub body, said stripping passage communicating between the lower end of said body for movement of a logging cable between the interior of a connected pipe string and a recess in the exterior wall of said sub body, apparatus for faciltating entry and exit of a logging cable between the exterior and interior of said pipe string when connected to said sub comprising,

a cable slot formed in the said body and running diagonally from a side entry opening in the body to a recess opening intersecting said recess,

a lower sheave wheel removably longitudinally mounted to said body and disposed at said recess opening, a portion of the outer edge of said lower sheave wheel rotatably occupying a portion of said cable slot, and

an upper sheave wheel removably longitudinally mounted to said body at said entry opening, a portion of the outer edge of said upper sheave wheel rotatably extending beyond the edge of said body, whereby

said logging cable may extend from the outside of said body, about said upper sheave wheel, along said slot, about said lower sheave wheel, and into the interior of a connected pipe string via said stripping element.

4,607,694

WELL PLUG QUALITY TESTING

Ramesh Sah, 1027 Edgemont Rd., N.W. Calgary, Alberta, Canada (T3A 2J5)

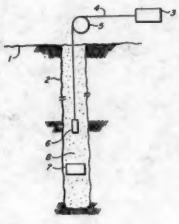
Filed Jan. 16, 1985, Ser. No. 691,872
Int. Cl.[4] E21B *47/00*
U.S. Cl. 166—250 **2 Claims**

1. A method of determining the presence of a contaminant in a fluid cement slurry located at a predetermined position within a borehole, wherein said slurry when pure has a specific density and which slurry has been exposed, before being placed in position in said borehole, to a potential contaminating substance having a density that differs from the density of the cement slurry to a measurable degree and which will, when mixed with the cement slurry produce a mixture having a

composite density that differs from that of a pure cement slurry by a measurable degree, comprising:

(1) measuring, when said slurry is in a relatively pure, uncontaminated condition, the density of the fluid cement;

(2) measuring the density of said slurry after it has been inserted down a borehole to a predetermined position, and after said slurry may have been exposed to a potentially contaminated substance, by progressively lowering a measuring device down a borehole into and through a portion of the zone of the cement slurry when in situ; and



(3) comparing the density of the cement slurry as measured when in situ within the borehole, and the relative values of the measured density as said measuring device passes into and through various stages of said zone portion, with the density of said slurry when said slurry is in a relatively pure, uncontaminated condition,

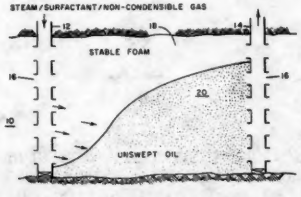
and thereby determining the presence of a contaminating substance within the slurry.

4,607,695

HIGH SWEEP EFFICIENCY STEAM DRIVE OIL RECOVERY METHOD

Stevan L. Weber, Allen, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 16, 1984, Ser. No. 580,926
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—272 **15 Claims**



1. A method for recovering oil from a subterranean, viscous oil-containing formation having a natural brine salinity concentration within the range of 10 to 20% by weight and penetrated by at least one injection well and at least one spaced-apart production well, said wells being in fluid communication with a substantial portion of the formation, comprising:

(a) injecting steam into the formation and producing fluids including oil from the formation via the production well for a predetermined period of time, thereby forming a steam-swept zone in the formation;

(b) thereafter injecting a mixture of steam, a noncondensible gas, and a surfactant consisting of a C_{12} alpha olefin sulfonate into the formation via the injection well, said surfactant capable of forming a stable foam with residual oil in the steam-swept zone at formation conditions of temperature and salinity thereby significantly decreasing the permeability of that zone and diverting the steam, noncondensible gas, into other portions of the formation; and

(c) continuing to inject said mixture of steam and surfactant and recovering fluids including oil from the formation via the production well.

8. A method for recovering oil from a subterranean, viscous oil-containing formation having no natural brine salinity, said formation penetrated by at least one injection well and at least one spaced-apart production well, said wells being in fluid communication with a substantial portion of the formation, comprising:

(a) injecting steam into the formation and producing fluids including oil from the formation via the production well for a predetermined period of time, thereby forming a steam-swept zone in the formation;

(b) thereafter injecting a mixture of steam, a noncondensible gas, a salt, and a surfactant consisting of a C_{12} alpha olefin sulfonate into the formation via the injection well, said salt added in an amount sufficient to provide a salinity of about 10 percent by weight based upon the mixture and said surfactant capable of forming a stable foam with residual oil in the steam-swept zone at formation conditions of temperature and salinity thereby significantly decreasing the permeability of that zone and diverting the steam into other portions of the formation; and

(c) continuing to inject said mixture of steam, noncondensible gas, salt, and surfactant having a salt salinity of about 10 percent by weight into the formation via the injection well and recovering fluids including oil from the formation via the production well.

4,607,696

TOPICAL VISCOSITY CONTROL FOR LIGHT HYDROCARBON DISPLACING FLUIDS IN PETROLEUM RECOVERY AND IN FRACTURING FLUIDS FOR WELL STIMULATION

John P. Heller, and Dileep K. Dandge, both of Socorro, N. Mex., assignors to New Mexico Tech. Research Foundation, Socorro, N. Mex.

Filed Aug. 30, 1985, Ser. No. 771,504
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—275 **12 Claims**

1. Method of removing crude oil from an underground oil-bearing formation comprising injecting into an injection well in the formation a solution of a compound of the formula R_3SnF where each R is independently an alkyl, aryl or alkylaryl group having from 3 to about 12 carbon atoms, in a solvent hydrocarbon having from two to six carbon atoms, moving said solution in the direction of the oil to be removed under conditions whereby the organotin compound increases the viscosity thereof, displacing at least a portion of said oil with said solution, and removing the displaced oil through a producing well.

4,607,697

PROPPING AGENT BASED ON ZIRCONIA AND SILICA FOR DEEP GEOLOGICAL FRACTURES

Daniel Urffer, Morieres-les-Avignon, France, assignor to Societe Europeenne des Produits Refractaires, Neuilly-Sur-Seine, France

Division of Ser. No. 312,749, Oct. 19, 1981. This application Aug. 6, 1985, Ser. No. 762,779
Claims priority, application France, Nov. 13, 1980, 80 24128
Int. Cl.[4] E21B *43/267*
U.S. Cl. 166—280 **3 Claims**

1. In a method of stimulating oil wells by fracturing of geological strata by injecting a fluid at high pressure at the level of the strata to be fractured, then by injecting a solid granular propping agent in order to prevent the fractures from closing up, the improvement consisting in using a granular propping agent which is resistant to stresses of up to 100 MPa, has a density of between 3150 and 3250 kg/m^3 and has a breakage rate, in a multilayer bed test, of no more than 2.9% at 100 MPa, said granular propping agent consisting of balls formed by melting, granulating and solidifying an initial composition

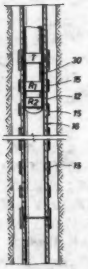
which consists essentially, by weight on the oxide basis, of 47.1 to 48.7 parts of ZrO_2, 52.9 to 51.3 parts of SiO_2, the total of ZrO_2 and SiO_2 amounting to 100 parts, 8.2 to 16.9 parts of Al_2O_3 and 4.1 to 8.5 parts of at least one oxide selected from the group consisting of MgO, CaO, FeO and TiO_2.

4,607,698

PIPE CONFIGURATION COMPATIBLE WITH CBL

Edward T. Wood, Kingwood, Tex., assignor to Completion Tool Company, Houston, Tex.

Filed Jan. 25, 1985, Ser. No. 694,848
Int. Cl.[4] E21B *33/14, 49/00*
U.S. Cl. 166—285 4 Claims



1. A tubular pipe for use in a well bore including

a tubular steel mandrel pipe having end means for attachment in a string of pipe;

said pipe having an outer surface between the ends of said pipe having intermittent coatings of grit-like materials bonded to the outer surface for bonding to cement in a borehole, said intermittent coatings providing uncoated intermittent portions on said pipe where the spacing between two intermittent coatings and an intermediate uncoated portion on the pipe is functionally related to the spacing between a transmitter and first receiver of a cement bond logging tool for providing uncoated section of pipe relative to a transmitter/receiver spacing on a cement bond logging tool and for removing the effects of the coatings from the responses of the cement bond logging tool.

4. A method for completing a well comprising the steps of:

positioning a string of pipe in a well bore;

injecting a cement slurry into the annulus between the string of pipe and the bore and permitting the cement to cure, where the string of pipe has an outer surface having intermittent coatings of grit-like materials bonded to its outer surface for bonding to cement, said intermittent coatings providing uncoated intermittent portions on said pipe;

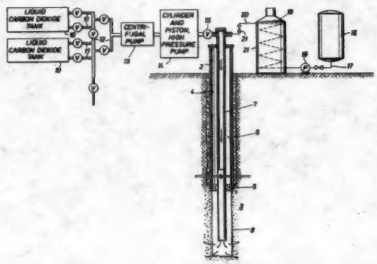
moving a cement bond logging tool through said string of pipe where the spacing between the transmitter and receiver of the cement bond logging tool is functionally related to the spacing between two intermittent coatings and an intermediate uncoated portion on the pipe to provide uncoated section of pipe relative to the transmitter and receiver of the cement bond logging tool and for obtaining a cement bond log of the cemented string of pipe in which the effects of the coatings are removed from the cement bond logging tool.

4,607,699

METHOD FOR TREATING A TAR SAND RESERVOIR TO ENHANCE PETROLEUM PRODUCTION BY CYCLIC STEAM STIMULATION

David J. Stephens, Southwell, England, assignor to Exxon Production Research Co., Houston, Tex.

Filed Jun. 3, 1985, Ser. No. 740,613
Int. Cl.[4] E21B *43/24, 43/26*
U.S. Cl. 166—303 8 Claims



1. A method for recovering hydrocarbons from a virgin drainage area of a subterranean tar sand formation that is penetrated by a well, comprising the steps of:

(a) injecting liquid carbon dioxide through said well into said formation at a rate and pressure that is sufficient to fracture said virgin drainage area;

(b) discontinuing the injection of said liquid carbon dioxide after said virgin drainage area has been fractured and, thereafter, while carbon dioxide is still in place within said formation;

(c) injecting steam through said well at a rate and pressure that is sufficient to place said steam into said formation through the fractures in said virgin drainage area;

(d) retaining said steam within said formation for a period of time sufficient to permit said hydrocarbons within said virgin drainage area to absorb the heat from said steam; and, thereafter,

(e) opening said well to produce effluents from said virgin drainage area.

4,607,700

ALPHA-OLEFIN SULFONATE DIMER SURFACTANT CYCLIC STEAM STIMULATION PROCESS FOR RECOVERING HYDROCARBONS FROM A SUBTERRANEAN FORMATION

John H. Duerksen, Fullerton; Robert G. Wall, Pinole, and Jack D. Knight, Berkeley, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 10, 1984, Ser. No. 639,973
The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—303 31 Claims

1. A cyclic steam-foam process of recovering hydrocarbons from a subterranean formation penetrated by a well comprising:

injecting a steam and alpha-olefin sulfonate dimer foam at said well;

displacing said steam and alpha-olefin sulfonate dimer foam out into the formation;

terminating the injection of said steam and alpha-olefin sulfonate dimer foam; and

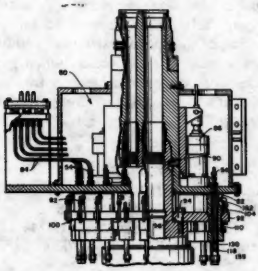
recovering hydrocarbons from said well.

4,607,701

TREE CONTROL MANIFOLD

Dag H. Z. Gundersen, Ventura, Calif., assignor to Vetco Offshoe Industries, Inc., Ventura, Calif.

Filed Nov. 1, 1984, Ser. No. 667,317
Int. Cl.[4] E21B *33/038, 34/04*
U.S. Cl. 166—368 13 Claims



1. In a subsea completion tree for the injection, use or production of oil or gas from a subsea well having valve operators actuated by hydraulic fluid and other devices actuated by hydraulic fluid to control the flow of oil or gas from the well, to connect the tree to the well and flowlines, etc., from a remote source of fluid under pressure directed to said tree in two paths, the improvement comprising;

a control manifold as part of said tree for controlling and directing the flow of said hydraulic fluid from either path to the valve operators and to the other hydraulically actuated devices, said control manifold including,

supporting means,

a plurality of shuttle type valve cartridges each having a body member with an axial bore and a moveable piston therein,

each body member being removably affixed to said supporting means,

said supporting means being such that the number and type of cartridges may be selected and/or replaced as desired,

an outlet in each body member and an inlet in some body members,

each piston in one position connected the inlet of those body members having an inlet to the outlet of the same body member for directing said hydraulic fluid from one path to said valve operators,

each piston being spring biased to said one position,

said pistons being positioned so as to be subject to means for moving each of said pistons against said spring bias to a second position thereby disconnecting said inlets from said outlets, and thereby connecting each outlet in each body member with said moving means for directing hydraulic fluid from a second path to said valve operators and to the other hydraulically actuated devices.

11. A shuttle type valve cartridge for use in a subsea type completion tree comprising,

a body member having an axial bore with a moveable piston therein,

said body member adapted to be removably affixed to a supporting means on said tree,

said body member being open at one end thereby forming one inlet to said body member, but which is closed by said piston in one position protecting said bore from the ambient sea, said piston being spring biased to said one position,

an outlet in said body member,

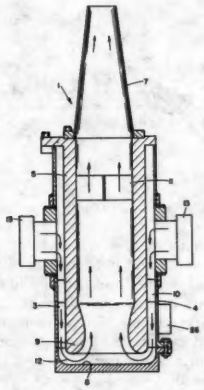
said piston being positioned in said bore so as to be subject to means for moving said piston against said spring bias to a second position thereby connecting said outlet with said moving means for directing hydraulic fluid from one path to valve operators and other hydraulically operated devices in said tree.

4,607,702

FIRE MONITORS

Donald S. Miller, Bedford, England, assignor to The British Hydromechanics Research Association, Cranfield, England

PCT No. PCT/GB83/00122, § 371 Date Dec. 29, 1983, § 102(e) Date Dec. 29, 1983, PCT Pub. No. WO83/03768, PCT Pub. Date Nov. 10, 1983
PCT Filed Apr. 26, 1983, Ser. No. 579,901
Claims priority, application United Kingdom, May 4, 1982, 8212775
Int. Cl.[4] A62C *27/00*
U.S. Cl. 169—25 3 Claims



1. A fire monitor for projecting water comprising:

an outer tube having an upstream end communicating with water inlet means and a downstream and closed by a baffle plate;

an inner tube located radially within and coaxial with the outer tube, said inner tube having an open end located adjacent to and spaced from said baffle plate;

an outlet nozzle connected to a downstream end of said inner tube and extending coaxially therefrom;

said inner tube having an outer surface which is substantially constant in diameter, and said outer tube having an inner surface which is substantially constant in diameter and is spaced from said outer surface of said inner tube thereby defining a channel therebetween, whereby water flows from said inlet means through said channel, strikes said baffle plate and is deflected into said open end of said inner tube to flow towards said outlet nozzle;

said inner tube having an inner surface and said open end of said inner tube is rounded to provide a continuous surface between said inner and outer surfaces of said inner tube;

said inner surface of said inner tube having a continuous surface defined by a gradual increase in the cross-section of said inner tube from said rounded open end over a portion of said predetermined length and a gradual decrease in cross-section for the remainder of said predetermined length;

said baffle plate having a surface which faces said open end of said inner tube, said facing surfaces having a curved periphery corresponding to the rounded open end of said inner tube and a continuous flat surface extending over the entire remaining area of said facing surface, whereby a semi-toroidal bend is provided at said downstream end of said outer tube and said open end of said inner tube to minimize turbulence in the water flow from said channel into said inner tube;

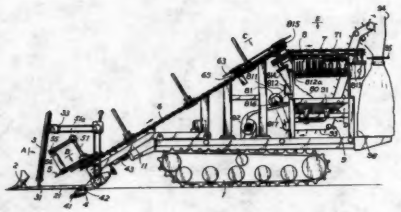
and said outer tube has an outer surface which has a substantially constant diameter to permit said outlet nozzle to be deflected through a wide range of angles without obstruction.

4,607,703

PEANUTS HARVESTER AND ITS HARVESTING METHOD

Kuo-Ming Wang, P.O. Box 10160, Taipei, Taiwan

Filed Sep. 9, 1985, Ser. No. 774,007
Int. Cl.[4] A01D *29/00, 33/02*
U.S. Cl. 171—1 **5 Claims**



1. A peanuts harvester comprising:

a truck body;

at least three plant row dividers, each formed as a tapered front portion and a rear portion with divergent arcuated shape and fixed on the front end of said truck body;

at least two pairs of stalk straighteners, each including a plurality of straightening blades pivotedly mounted on a loop chain and each having a base extension to allow said blade to be horizontally backed against the chain so that two corresponding blades facing each other may straighten the stalk of peanut plant, said stalk straightener being driven by a driving unit coupled to the shaft of a peanut digger; at least two peanut diggers, each including a digger head operatively digging peanuts under the earth adapted for feeding peanuts into a feeder;

a soil remover provided with soft brush coupled to the shaft of said digger to primarily remove the soil on the roots of peanut plant;

a plant feeder including a vertical first spindle coupled to a driving motor, a right-side conveying loop having plurality of blades thereon and rotatably pushing the peanut stalks inwards in cooperation with a right-side follower spindle having plurality of blades thereon, a second spindle coupled to said first spindle and driving the right-side follower spindle, a left-side conveying loop having plurality of blades and rotatably pushing the peanut stalks inwards in cooperation with a left-side follower spindle having plurality of blades thereon, two feeding wheels rotatably engaged with each other and driven by said first spindle, and a convergent guide guiding the two-row stalks into the recess portions defined by said two feeding wheels each formed with plurality of recess portions along its perimeter;

a tilted conveyer driven by said motor, including plurality of connecting links each having triangle-shaped side plate and every two neighboring side plates forming a recess portion, and clamping bar resiliently clamping the stalks between said bar and said recess portions between said side plates, and a stalk holder having plurality or holding blades on a conveying loop driven by said motor to quickly push the stalks forwards to be picked up by a horizontal conveyer;

a horizontal conveyer, driven by said driving motor and adjacent to and cooperating with the upper end of said tilted conveyer, including plurality of triangle-shaped side plates on the connecting links of a chain and plurality of resilient clamps clamping the upper stalks to allow the lower peanuts to be pendant downwards;

a peanut stripper including a casing, a driving motor, a pair of primary rakes, plural pairs of transversely-stripping rakes, and plural pairs of longitudinally-stripping rakes, all rakes resiliently held on the hubs disposed around two shafts driven by said driving motor and capable of combing and stripping the peanuts off the peanut plants when holding the upper stalks on said horizontal conveyer; and

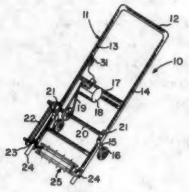
a peanut collector including a shaking screen positioned under said casing of said peanut stripper, a blower blowing air to remove the dust of peanuts when passing said screen, a collecting conveyer driven by said motor and lifting the peanuts to a collecting hopper to be finally collected in a bag.

4,607,704

POWER RAKE

Josef Kepes, 7630 N. Oketo, Niles, Ill. 60648

Filed May 31, 1984, Ser. No. 615,746
Int. Cl.[4] A01B *33/14, 45/02*
U.S. Cl. 172—42 **14 Claims**



1. A manually propelled power rake comprising,

(a) a generally U-shaped wheeled frame providing a handle and a pair of spaced parallel legs,

(b) a power source mounted on said frame,

(c) a rake wheel journalled between the free ends of said legs of said frame,

(d) said rake wheel including a driven shaft having a plurality of radially extending prongs with said prongs arranged in aligned sets disposed at right angles with respect to each other,

(e) plate means carried by said rake wheel and extending along each set of prongs for regulating the depth of penetration of said prongs of each set into the terrain to be worked,

(f) means for radially adjusting said regulating means relative to the radial length of said prongs of each set of prongs mounted on said rake wheel, and

(g) means connecting said rake wheel to said power source for rotation thereby about a horizontal axis.

4,607,705

ROW CROP CULTIVATOR INCLUDING DISK AND SETTING INDICATOR THEREFOR

John A. Tebben, E. Hwy. 23, Clara City, Minn. 56222

Filed Dec. 27, 1983, Ser. No. 566,040
Int. Cl.[4] A01B *21/08, 71/02*
U.S. Cl. 172—430 **2 Claims**

1. A row crop cultivator suitably styled to be drawn by a tractor or similar vehicle and which includes a frame structure and linkage means suitable to receive various implement attachments, wherein the improvement comprises:

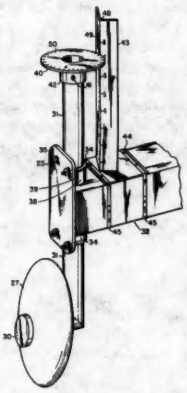
disk support means attached to said frame structure, said disk support means including a plurality of support shafts;

a plurality of weeding disks, each disk being rotatably mounted to a corresponding one of said support shafts;

separate adjustment means associated with each support

shaft for enabling each corresponding weeding disk to be altered as to its depth and angular orientation; and

separate indicator means associated with each adjustment means for indicating the depth and angular setting of the corresponding weeding disk, said indicator means being cooperatively arranged with said adjustment means such that the duplication of a setting for a first one of said weeding disks onto another one of said weeding disks results in a duplication of the positional orientation placement of the first disk by said another disk, said separate indicator means including a degree plate coaxially disposed about the uppermost end of its corresponding support shaft and a depth gauge disposed substantially parallel to the support shaft and positioned adjacent to the degree plate wherein the degree plate and the depth gauge each include a series of spaced graduations and each serves as the alignment marker for the other, said depth gauge being arranged in angular form thus providing a vertex edge, and the top surface of the degree plate being arranged as a level alignment indicator for selecting the appropriate graduation from the depth gauge and the vertex edge of the depth gauge serves as a pointer for determining the angular orientation from the degree plate.



4,607,706
SECTIONAL DISC ASSEMBLY FOR GROUND-WORKING IMPLEMENTS

Ian Raynor, Bay 5, 1249 Clarence Avenue, Winnipeg, Manitoba, Canada (R3T 1T4)

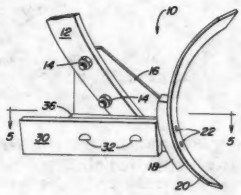
Filed Jun. 22, 1984, Ser. No. 623,346
Int. Cl.[4] A01B *23/06*
U.S. Cl. 172—599 **26 Claims**

1. A disc assembly for ground-working implements comprising in combination, a main mounting shaft and a plurality of sectional disc holding spools mounted on said shaft in end-to-end relationship, each spool including a disc segment holding end and an adjacent spool mating end, said disc segment holding end including an integral annular flange extending radially outwardly from said disc segment holding end towards the outer perimeter of said spool thereby defining an annular stabilizing recess concentrically located solely upon said disc segment holding end and spaced inwardly from the outer edge thereof, at least two disc segments engagable by the inner ends thereof into said stabilizing recess and means outboard of said recess to clamp said segments to said disc segment holding end.

4,607,707
CHISEL PLOW LANDSIDE

Wayne L. Shellhouse, Rock Island, and James M. VanAuwelaer, Coal Valley, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Jun. 28, 1984, Ser. No. 625,810
Int. Cl.[4] A01B *15/00*
U.S. Cl. 172—764 **2 Claims**



1. In a chisel plow including a frame, a downwardly depending standard attached to the frame, and a chisel shovel attached to the standard and having lateral edges disposed to form a fore-and-aft furrow as the chisel shovel is moved forwardly through the soil, the improvement comprising:

a landside attached to said standard rearward of said shovel and disposed to extend generally fore-and-aft and disposed laterally outward to one of the lateral edges of said chisel shovel;

a beam plate including a frog attached to its forward end to receive said chisel shovel, said beam plate being attached to said standard and disposed to interconnect said standard and said chisel shovel; wherein said beam plate extends rearwardly from said standard, wherein said landside is attached to a rearward portion of said beam plate, and wherein said standard is disposed intermediate said beam plate and said landside;

a spacer attached to and disposed intermediate the rearward portion of said beam plate and said landside; and

a wedge plate having a narrow end attached to and disposed intermediate said standard and said landside, and a wide end attached to and disposed intermediate said spacer and said landside.

4,607,708
FOLDABLE FRAME FLEXING HINGE

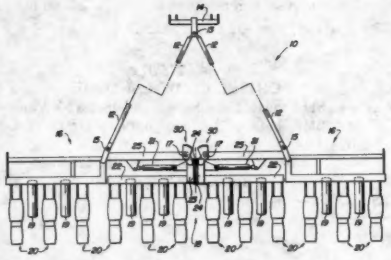
Donald K. Landphair, Bettendorf, Iowa, and Gordon L. Salley, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Mar. 23, 1984, Ser. No. 592,523
Int. Cl.[4] A01B *73/00, 63/22;* **B62D** *53/00*
U.S. Cl. 172—776 **7 Claims**

1. In a forwardly foldable implement frame having a pair of foldable wing sections attached to the hitch of a draft vehicle and being pivotally movable toward and away from each other between a folded transport position and an unfolded operational postion by selective activation of a power means; and a horizontal fore-and-aft pivot flex hinge interconnecting said wing sections to enable vertical flexing of the wing sections to follow the contour of the ground when the wing sections are disposed in the unfolded operational position, the improvement comprising:

a first bumper rigidly attached to one of said wing sections and directed to extend toward and contact the other of

said wing sections at a point vertically spaced from and adjacent to said flex hinge when said wing sections move



toward said folded transport position, wherein said contact restricts said flex hinge from pivotal movement.

4,607,709

MOTOR DRIVEN HAND-HELD MACHINE WITH TWO PART TOOL ASSEMBLY

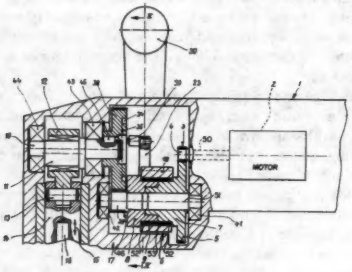
Hans-Heinrich Walser, Gruesch, Switzerland, assignor to Trumpf GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Aug. 29, 1984, Ser. No. 645,604

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1983, 3332258

Int. Cl.[4] B23B *45/00*

U.S. Cl. 173—170 **8 Claims**



1. In a motor-driven portable machine tool, the combination comprising:

(a) a housing;

(b) a drive motor in said housing including a rotatable output shaft;

(c) a tool driving member mounted for reciprocation in said housing at a point spaced from said output shaft and having means for mounting a tool for reciprocation thereby;

(d) a tool drive assembly operatively connected to said tool driving member to effect its reciprocation;

(d) a first gear mechanism including a gear driven by said output shaft;

(f) a second gear mechanism drivingly engaged with said tool drive assembly;

(g) coupling means between said first and second gear mechanisms to effect transfer of rotation from said output shaft to rotate of said second gear mechanism and thereby said tool drive assembly, said coupling means including:

(i) axially adjacent first and second coupling halves supported for rotation in said housing about a common axis, said coupling halves being relatively rotatable;

(ii) a coil spring disposed about axially adjacent circumferential surfaces on said coupling halves, said first gear mechanism including a second gear operatively connected to the adjacent first coupling half to effect its rotation, said second gear mechanism including a driven gear operatively connected to the adjacent second coupling half to be rotated thereby and transmit the rotation to said tool drive assembly, said spring being engaged at one end with said second coupling half;

(iii) a clutch member having the other end of said spring engaged therewith and rotatable about said axial surface of first coupling half; and

(iv) a releasable latch member engageable with said clutch member to prevent its rotation, release thereof from such engagement causing said spring to coil tightly about said adjacent surfaces of both coupling halves and thereby effecting driving engagement therebetween, said latch member upon reengagement with said clutch member producing an enlargement of the diameter of said coil spring about said surfaces to disengage said coupling halves; and

(h) a stop mechanism operatively connected to said latch member for moving said latch member into engagement with said clutch member to stop said tool driving member in one extreme position of reciprocation.

4,607,710

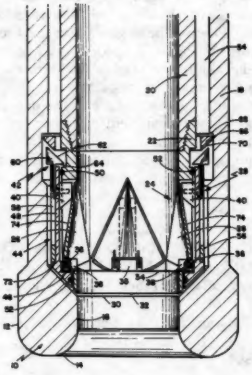
CAMMED AND SHROUDED CORE CATCHER

Steven R. Radford, West Jordan, Utah, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Aug. 31, 1984, Ser. No. 646,578

Int. Cl.[4] E21B *25/00, 49/02*

U.S. Cl. 175—249 **14 Claims**



1. A full closure core catcher disposed within a coring tool, said tool having an inner barrel for cutting a core comprising:

a plurality of closeable valves smoothly forming a portion of said inner barrel and displaceable within said inner barrel to fully close said inner barrel wherein each of said plurality of valves is rotatively coupled to said inner barrel and disposable through a window defined in said inner barrel, and further comprising means for biasing each valve in a withdrawn and open configuration; and

means for positively displacing each of said plurality of valves into said inner barrel in opposition to said means for biasing each valve in a withdrawn and open configuration,

whereby full closure of said inner barrel is provided without dependency upon descent of said core within said inner barrel.

4,607,711

ROTARY DRILL BIT WITH CUTTING ELEMENTS HAVING A THIN ABRASIVE FRONT LAYER

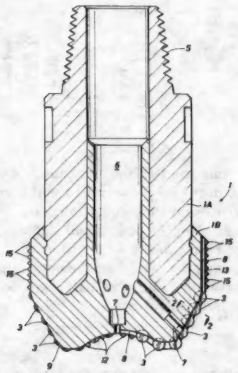
Djurre H. Zijsling, Gd Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 28, 1985, Ser. No. 706,987

Claims priority, application United Kingdom, Feb. 29, 1984, 8405267

Int. Cl.[4] E21B *10/46*

U.S. Cl. 175—329 2 Claims



1. Rotary drill bit for deephole drilling in subsurface earth formations, the bit comprising a bit body suitable to be coupled to the lower end of a drill string, the bit body carrying a plurality of cutting elements, said cutting elements facing forwardly in the direction of rotation and extending downwardly from the bit body during normal drilling operations with the cutting face of each cutting element sloping at an angle of within 15 degrees to the vertical, at least part of each of said elements comprising a front layer of interbonded abrasive particles having a thickness of between 0.2 and 0.4 mm., said abrasive particles comprising a polycrystalline mass of abrasive diamond particles said mass being bonded to a tungsten carbide substratum.

4,607,712

ROCK DRILL BIT

Lars E. Larsson, Sandviken, Sweden, assignor to Santrade Limited, Lucerne, Switzerland

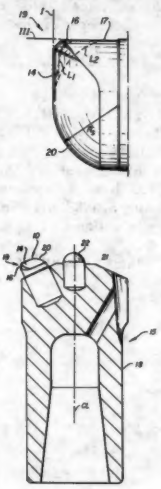
Filed Dec. 19, 1984, Ser. No. 683,565

Claims priority, application Sweden, Dec. 19, 1983, 8307010

Int. Cl.[4] E21B *10/16, 10/52*

U.S. Cl. 175—410 9 Claims

1. Rock drill bit of the impact type comprising a substantially cylindrical body and a front surface provided with a plurality of fixed peripherally spaced inserts, each said insert having a body with a generally cylindrical jacket surface defining a longitudinal axis and a head section protruding outwardly from said front surface in a direction oriented at an acute angle relative to a longitudinal axis of said bit body, said head section being substantially circular as viewed along said longitudinal axis of said insert and provided with first and second working surfaces, said first working surface being arched in at least one direction, said second working surface being spherical and configured as substantially one-quarter of a sphere, a part of a junction between said first working surface and said jacket surface comprising a beveled transition surface such that said head section is configured asymmetrically about an imaginary plane which contains said longitudinal axis of said insert and which imaginary plane is oriented such that said transition surface and said second working surface lie on opposite sides of said plane, said transition surface being turned to face away



from said longitudinal axis of said bit body and arranged to generally determine the diameter of a bore cut by said bit.

4,607,713

DISTRIBUTING TABLE CONSTRUCTION FOR USE IN COMBINATIONAL WEIGHING APPARATUS

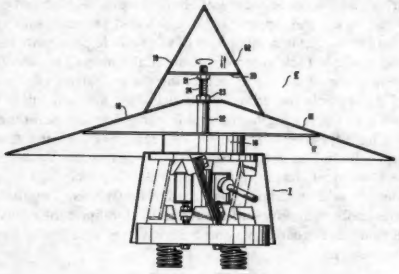
Hitoshi Nishi, Ohtsu; Asahiro Izumi, Kusatsu, and Sadanobu Nishiyama, Shiga, all of Japan, assignors to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 14, 1985, Ser. No. 744,745

Claims priority, application Japan, Jun. 15, 1984, 59-88075[U]

Int. Cl.[4] G01G *19/22, 21/28*

U.S. Cl. 177—25 7 Claims



1. A distributing table construction for use in a combinatorial weighing apparatus having a plurality of weighing mechanisms, a supply mechanism for supplying articles to be weighed into the weighing mechanisms, and means for combining the weights of the articles as measured by the weighing mechanisms, said distributing table construction comprising:

(a) a vibrator disposed as a portion of said supply mechanism;

(b) a conical main table operatively connected to said vibrator and having a surface slanted at a relatively small angle radially outwardly; and

(c) a conical subtable mounted on said conical main table and

having a lower end of an outside diameter smaller than the outside diameter of said conical main table, said conical subtable having a surface slanted at an angle larger than said relatively small angle of the surface of said conical main table.

4,607,714

RADIATOR-FAN SYSTEM, PARTICULARLY FOR BUSES HAVING REAR-MOUNTED ENGINES

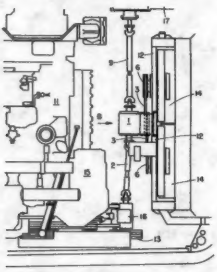
Josef Uttenthaler, Hettenshausen, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,827

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1982, 3236794

Int. Cl.⁴ B60K *11/04*

U.S. Cl. 180—68.1 **6 Claims**



1. A resistor-fan system for vehicles, such as buses having rear-mounted engines, comprising a first belt drive including V-belts for driving the fan of said system, a vehicle engine associated with said V-belt drive, and a bevel gear drive having an output coupling the V-belt drive on the fan with said engine, a first cardan shaft, a jackshaft, and a second V-belt drive at the engine for connecting the jackshaft to the output of said engine, said first cardan shaft being interconnected between said jackshaft and a power input end of said bevel gear drive, and a second cardan shaft coupled to the bevel gear drive at an end opposite the input end thereof, said system being arranged in a side panel of the vehicle proximate the rear end of the vehicle oriented substantially along the direction of vehicle travel, means for mounting the gear drive on the frame of the vehicle including a self-adjusting vertical linear guide and a self-adjusting horizontal linear guide for facilitating the sliding adjustment of the bevel gear drive and the first belt drive, including spring means for imparting spring tension to said vertical linear guide for effecting the self-adjusting thereof, said first and second cardan shafts being longitudinally adjustable, whereby said cardan shafts facilitate the adjustment of said bevel gear drive and belt drive relative to the frame of the vehicle.

4,607,715

PROPORTIONAL PNEUMATIC CONTROL SYSTEM FOR AIRCUSHIONS

Hartwig Michels, and Knud Klingler, both of Nuremberg, Fed. Rep. of Germany, assignors to Delu-Luftkissentransportgeratetechnik GmbH, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 679,629

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1984, 3400101

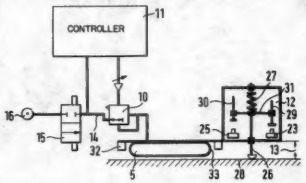
Int. Cl.⁴ B60V *1/11*

U.S. Cl. 180—118 **11 Claims**

1. A control system for an aircushion carrier having a plurality of air cushions for supporting a carrier above a gliding surface, the air cushions to be controllably connected to a source of compressed air, the control system comprising:

a pressure regulator for controllably supplying air to the air cushions at an operating pressure determined by a control level applied to the pressure regulator;

a transmitter for sensing the distance between the carrier and the gliding surface, thereby sensing changes in load;



a controller connected to the transmitter and operative to adjust the control level applied to said pressure regulator in response to said changes in load on said carrier, the control level being increased and decreased by the controller in response to the transmitter; and,

an adjustable damping means for the controller, the damping means controlling a rate of at least one of said increase and decrease in the control level.

4,607,716

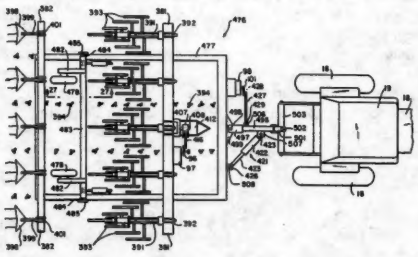
AGRICULTURAL APPARATUS WITH AN AUTOMATIC POSITIONING MECHANISM AND METHOD

Charles L. Beck, 238 Naples St., Chula Visa, Calif. 92011

Filed Oct. 14, 1983, Ser. No. 542,116

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—131 **19 Claims**



1. In an agricultural apparatus having an automatic positioning mechanism, a framework supported in a position above the ground for movement over the ground, an arm connected to the framework at a predetermined angle, a ground-engaging member carried by the arm for following a predetermined path as the apparatus is moved over the ground, said arm being mounted to permit limited movement of the arm angularly relative to said framework in a direction lateral to said path to change said angle, actuator means for causing movement of the framework responsive to said limited movement, electrical circuit means responsive to the movement of said arm from said predetermined angle and connected to said actuator means for causing operation of the actuator means to automatically position the framework so that the framework travels along a path which is parallel to said predetermined path, the ground-engaging member being mounted to trail the mounting for the arm so as to minimize the load produced by said ground-engaging member; said apparatus including a self-propelled vehicle, and the framework being mounted on the vehicle extending forwardly from the front of the vehicle, the mounting for said arm being near the forward portion of the framework with the

ground-engaging member extending rearwardly towards the forward end of the vehicle; the electrical circuit means including a tracking unit which is responsive to the angular movement of said arm, and including means for transmitting electrical signals to cause the actuator to move the framework in a manner to return the arm to its predetermined angle.

4,607,717

STEERING APPARATUS

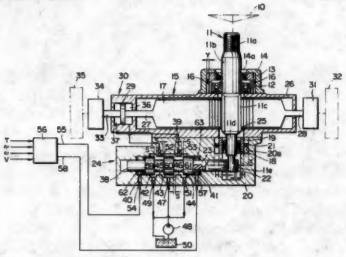
Masafumi Nakayama, Yamato, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jan. 25, 1985, Ser. No. 694,975

Claims priority, application Japan, Jan. 27, 1984, 59-13885

Int. Cl.[4] B62D *3/12, 5/10;* **F15B** *9/10*

U.S. Cl. 180—141 **17 Claims**



1. A steering apparatus, comprising:

a pinion shaft having a pinion of a steering gear and operably connected with a steering wheel;

a rack of the steering gear operably connected to steerable road wheels and being in mesh with the pinion;

a power cylinder, having first and second hydraulic chambers opposing each other, for hydraulically actuating said rack;

a valve means for selectively connecting the first and second hydraulic chambers with a hydraulic pressure source and an oil reservoir, said valve means comprising a valve body which has an elongate slot in a direction of a movement of the valve body;

means, responsive to electric signals representative of steering conditions, for controlling a position of the valve body;

means, in response to a steering reactive force, for mechanically restraining the movement of the valve body, said restraining means comprising a rod in engagement with the elongate slot with a clearance along the direction of the movement of the valve body, the clearance allowing the controlling operation by said controlling means.

4,607,718

MOTORCYCLE

Motoi Nagataki, and Takashi Inagaki, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,916

Claims priority, application Japan, Sep. 1, 1983, 58-160982; Sep. 1, 1983, 58-160981

Int. Cl.[4] B62M *7/02, 17/00*

U.S. Cl. 180—226 **5 Claims**

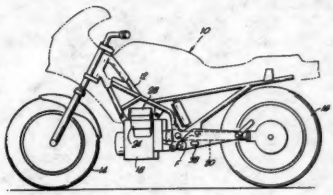
1. A motorcycle comprising

a frame having a substantially symmetrical center plane;

an engine mounted on said frame;

a rear wheel operatively mounted to said frame; and

a drive train from said engine to said rear wheel and including a drive shaft diverging from said center plane of said frame rearwardly of said engine, said engine including two cylinder branks extending laterally on opposite sides of said center plane with one of said cylinder banks being located forwardly of the other of said cylinder banks of said frame, cylinder heads for said cylinder banks and a



crankshaft, said crankshaft extending at an angle to said center plane such that a line between the centers of said cylinder banks is normal to said center plane.

4,607,719

ALCOHOL DETECTION DEVICE

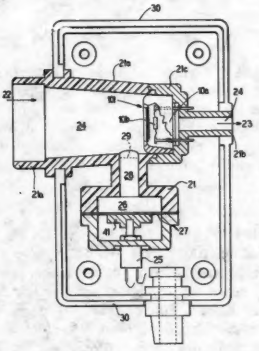
John W. Rugis, and Graham J. Drummond, both of Auckland, New Zealand, assignors to Drummond and Relph Limited, Auckland, New Zealand

Filed Dec. 19, 1984, Ser. No. 683,670

Claims priority, application New Zealand, Dec. 21, 1983, 206266

Int. Cl.[4] B60K *28/02*

U.S. Cl. 180—272 **5 Claims**



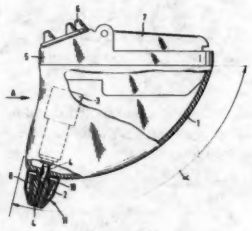
1. A breath sample alcohol detection device comprising a body having openings at each of two opposite ends thereof and forming an interior chamber disposed between and terminating with the end openings, the portion of said body associated with a first of the end openings forming a mouthpiece and that opening conjoining directly with an inlet section of the interior chamber, the inlet section having a cross-sectional area substantially larger than the cross-sectional area of an output section of the interior chamber with the output section directly joining with the second end opening whereby an exhalation breath applied to the mouthpiece can create an increase in the fluid pressure within the inlet section of the interior chamber, a fluid pressure operative electrical switch mounted in an ante-chamber of the inlet section of the interior chamber and being sealiningly separated therefrom by a diaphragm, the pressure operative switch being set to actuate at a fluid pressure predetermined to be a pressure creatable by exhalation into the mouthpiece and an alcohol sensor having an electrically compatible output and being mounted in the inlet section of the interior chamber with the mounting suspending the sensor clear of the surrounding body.

4,607,720

HEARING AID

Heinz Hardt, Vienna, Austria, assignor to Viennatone Gesellschaft m.b.H., Vienna, Austria

Filed Jul. 29, 1985, Ser. No. 760,154
Claims priority, application Austria, Aug. 6, 1984, 2547/84
Int. Cl.[4] A61B 7/02
U.S. Cl. 181—135 10 Claims



1. A hearing aid having a sound emission opening and adapted to be substantially fully inserted into the external passage of an ear, which comprises

(a) a housing containing a sound receiver,

(b) a coupling element connected to the housing in communication with the sound emission opening, and

(c) a sealing plug detachably connected to the coupling element and having one end adjacent the housing and another end remote from the housing, the sealing plug being comprised of

(1) a cylindrical inner part mounted on the coupling element and

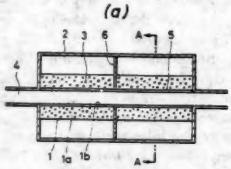
(2) a substantially cylindrical outer part surrounding the inner part and turned back from the inner part at the remote end and extending to the one end of the sealing plug, the inner and outer parts defining an annular gap therebetween extending to the one end of the sealing plug adjacent the housing.

4,607,721

MUFFLER FOR EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

Hideharu Tanaka; Matsuo Sekiya, both of Hyogo, and Fusaoki Uchikawa, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 531,894, Jul. 5, 1983, Pat. No. 4,523,662. This application Apr. 8, 1985, Ser. No. 720,926
Claims priority, application Japan, Nov. 5, 1981, 56-178570; Nov. 5, 1981, 56-178571; Nov. 5, 1981, 56-178572; Nov. 5, 1981, 56-178573; Jan. 29, 1982, 57-12863[U]; May 28, 1982, 56-91625
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] F01N 1/10
U.S. Cl. 181—249 13 Claims



1. A muffler for the exhaust gas of an internal combustion engine, comprising:

a casing,

a perforated sleeve disposed in said casing, said perforated sleeve having an interior through which the exhaust gas flows and a wall having a plurality of openings,

a cylindircal porous sound absorbing body arranged coaxially with said perforated sleeve on an outer periphery of said perforated sleeve,

a cylindrical thin film made of metal, said cylindrical thin film being intimately interposed between said perforated sleeve and said cylindrical porous sound-absorbing body,

a space defined between an inner periphery of said casing and an outer periphery of said cylindrical porous sound-absorbing body, and

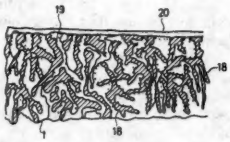
at least one communication passage means for providing a pressure balancing communication between the interior of said perforated sleeve and said space.

4,607,722

MUFFLER FOR EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

Hideharu Tanaka; Matsuo Sekiya, both of Hyogo, and Fusoaki Uchikawa, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 531,894, Jul. 5, 1983, Pat. No. 4,523,662. This application Mar. 1, 1985, Ser. No. 707,326
Claims priority, application Japan, Nov. 5, 1981, 56-178570; Nov. 5, 1981, 56-178571; Nov. 5, 1981, 56-178572; Nov. 5, 1981, 56-178573; Jan. 29, 1982, 57-12863[U]; May 28, 1982, 57-91625
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] F01N 1/10
U.S. Cl. 181—252 8 Claims



1. A muffler for the exhaust gas of an internal combustion engine, said muffler having an inlet and an outlet for exhaust gas and further comprising a casing and a cylindrical sound-absorbing body comprising a fibrous material and extending through said casing and having an inner cylindrical surface, and a heat resistant paint formed on said inner cylindrical surface, said heat resistant paint having a thickness not in excess of 250 micrometers.

4,607,723

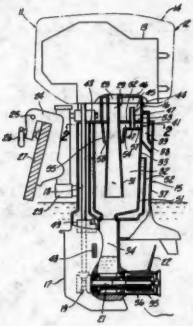
EXHAUST SYSTEM FOR OUTBOARD MOTORS

Masaki Okazaki, Shizuoka, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Sep. 28, 1984, Ser. No. 655,934
Claims priority, application Japan, Sep. 29, 1983, 58-179295
Int. Cl.[4] F01N 1/08
U.S. Cl. 181—272 20 Claims

1. In a silencing system for an outboard motor having a power head containing an internal combustion engine, a drive shaft housing depending from said power head, and a lower unit beneath said drive shaft housing, the improvement comprising exhaust discharge means for delivering exhaust gases from said power head engine into said drive shaft housing, an exhaust outlet for discharging exhaust gases from said drive

shaft housing, a resonance chamber defined above said drive shaft housing and tuning tube means extending from said drive



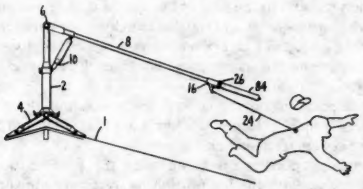
shaft housing into said resonance chamber for silencing exhaust gases prior to their discharge to the atmosphere.

4,607,724

SAFETY APPARATUS FOR ROOFERS

Julian T. Hillberg, P.O. Box 1643, Weaverville, Calif. 96093

Filed Oct. 9, 1985, Ser. No. 785,677
Int. Cl.[4] A62B *35/00*
U.S. Cl. 182—3 22 Claims



1. A safety device for preventing workers from falling off of a peaked roof, comprising:

(a) a saddle adapted to be mounted on the peak of said roof;

(b) a stanchion mounted on said saddle, said stanchion having at least a top portion rotatable relative to said stanchion;

(c) a boom pivotally connected to a top portion of said stanchion, said boom being pivotable in the vertical direction with respect to said stanchion;

(d) damping means for resiliently biasing said boom above a worker and for damping vertical pivoting of said boom relative to said stanchion;

(e) tether means slidably connected at one end with said boom and connectable at the other end to a safety belt or harness at a worker's back, said rotatable stanchion and slidable tether allowing the worker a high degree of work mobility on the roof without interference by said tether means; and,

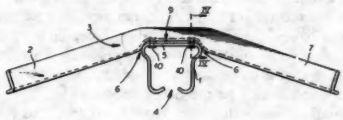
(f) means responsive to rapid movement of said tether means relative to said boom in the event of a worker's loss of footing or falling, to arrest said tether means so that said tether means and said boom means absorb the force of such rapid movement when said tether means catches the worker.

4,607,725

SAFETY LADDER

Arnfried Brinkmann, and Ernst Lehners, both of Essen, Fed. Rep. of Germany, assignors to Fahrleitungsbau GmbH, Essen, Fed. Rep. of Germany

Filed Oct. 24, 1985, Ser. No. 790,963
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1984, 3440549
Int. Cl.[4] E06C *7/08*
U.S. Cl. 182—189 7 Claims



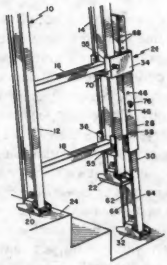
1. In a safety ladder comprising a vertical central ladder stringer and a plurality of horizontal rungs, wherein said central ladder stringer has a substantially C-shaped cross section with a front longitudinal slot, a rear transverse piece lying opposite to said front longitudinal slot, and said rear transverse piece having rounded longitudinal edges, and each of said rungs is applied to said central ladder stringer in the vicinity of said rear transverse piece from the outside and is attached thereto, and has an outer member bent forwardly, the improvement wherein each of said rungs is provided with an equal sided trapezoidally shaped recess for said rear transverse piece, by which each of said rungs straddles said central ladder stringer contacting only in the vicinity of said longitudinal edges on said central ladder stringer, and each of said rungs is attached to said central ladder stringer by a fastening means for interconnecting the rung at the rear transverse piece without obstructing the interior of said stringer.

4,607,726

LADDER EXTENSION

Richard J. Davis, and Vince J. Skandunas, both of 6314 Caminito Basilio, San Diego, Calif. 92111

Continuation-in-part of Ser. No. 486,710, Apr. 20, 1983, abandoned. This application Nov. 26, 1984, Ser. No. 674,650
Int. Cl.[4] E06C *7/44*
U.S. Cl. 182—204 16 Claims



1. A leveling device for removable attachment to a ladder comprising:

a hollow sleeve member of substantially rectangular cross-section having a pair of side walls joined by a pair of end walls each having a plurality of orifices therein such that each orifice on one end wall is paired with an axially aligned orifice on the other end wall;

a pair of substantially L-shaped brackets each affixed to opposite ones of said end walls at opposite ends of said sleeve member, each one of said L-shaped brackets having an arm member extending from a different one of said end

walls and an ear member extending substantially perpendicular from said arm member, said ear members being inwardly opposed and spaced apart from said sleeve member by said arm members so as to receive a ladder rail therebetween and each of said ear members having a U-shaped notch for receiving a ladder rung therein;

spacing means secured to said sleeve member for engaging and holding a ladder rail apart from said sleeve member when received within the regions defined by said L-shaped brackets and said sleeve member;

an extension member of I-shaped cross-section slidably mounted within said sleeve member, said extension member having a pair of sides interconnected by a cross-web, each one of said sides having a plurality of orifices therein such that each orifice on one side is paired with an axially aligned orifice on the other side;

a retaining pin, extending through a pair of end wall orifices and a pair of side orifices when axially aligned therebetween for selectively retaining said extension member within said sleeve member;

a foot member pivotally connected to a lower portion of said extension member; and

wherein said plurality of orifices located in said end walls are equally spaced apart by a first distance and said plurality of orifices in said sides are equally spaced apart by a second distance, said first and second distances being unequal.

4,607,727

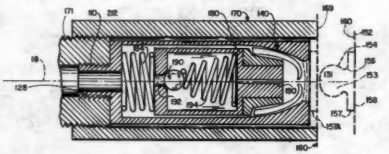
GREASE ZERK RAM

Vincent F. Jochum, c/o Gary Jochum, 641 S. 84th St., Lincoln, Nebr. 68510

Filed Mar. 18, 1985, Ser. No. 712,626

Int. Cl.[4] F01M *11/00*

U.S. Cl. 184—38.1 **5 Claims**



1. A grease ram comprising: a body, said body being elongated along an axis and having a hole extending therethrough along said axis, said hole having a first portion having a cylidrical wall, a force-receiving means at one end of said body, a plunger fixed to said force-receiving means and slidably extending into said body along said axis said plunger having a recess in its periphery, said recess being elongated along said axis, motion limiting means mounted on said body and protruding into said recess to limit outward movement of said plunger, piston means on said plunger inwardly of said recess and making close sliding fit with said cylindrical wall of said body, a grease insert port at one side of and extending through said body, a grease insert valve fitting in said port and normally closing said port and adapted to receive pressurized grease therethrough for the filling of said body with grease under pressure prior to ramming, the other end of said body being its forward end, a target grease fitting receiving unit attached to said forward end of said body and having an open forward end which receives therein a target grease fitting at times when said target fitting is to be greased, said unit having an open rearward end in communication with said hole, said body and said unit defining a body and unit assembly, a grease fitting protector, means attaching said protector to said body and unit assembly for holding to said assembly in a position such that the forward end of said protector is disposed forwardly of the forward end of said unit for engaging a surface of a device from which said target grease fitting protrudes whereby forward motion of said unit does not damage said target fitting.

4,607,728

PAD SPRING FOR DISC BRAKE AND HAVING RESTRICTING PORTION

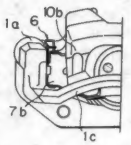
Kinzo Kobayashi, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 560,995, Dec. 13, 1983, abandoned. This application Aug. 26, 1985, Ser. No. 768,932

Claims priority, application Japan, Dec. 20, 1982, 57-192671[U]

Int. Cl.[4] F16D *55/224*

U.S. Cl. 188—73.38 **4 Claims**



1. A pad spring for use in a disc brake of the type having a stationary member adapted to be secured to a non-rotatable part of a vehicle on one side of a rotatable disc and having two leg portions spaced in the direction of the circumference of the disc, at least one friction pad location between and supported on the leg portions of the stationary member and slidable in a direction parallel to the axis of the disc, a caliper mounted on the stationary member and slidable in a direction parallel to the axis of the disc, and a pair of pad springs provided between the friction pad and the stationary member, each pad spring comprising:

a base portion contacting with and extending along a circumferentially facing side surface of each leg portion of the stationary member;

a retaining portion extending from the base portion and engaging with the leg portion for retaining the spring in position on the leg portion;

a pad pressing means consisting of a single pressing portion extending in a direction parallel to the axis of the disc and rigid against bending radially of the friction pad and slidingly engaging a radially outward surface of the friction pad, and a resilient connecting portion extending radially outwardly from said pressing portion and in the circumferential direction and connecting said pressing portion with said base portion for resiliently biasing said pressing portion as a whole in the radially inward direction; and

a pair of restricting portions separate from and spaced in the axial direction from said resilient connecting portion on opposite sides thereof and extending circumferentially from said base portion to a position spaced radially outwardly of said pressing portion in the path of radial outward movement of said pressing portion when a friction pad moves radially outwardly, said restricting portion being normally spaced radially outwards from said pressing portion by a predetermined distance for permitting radial outward movement of said pressing portion but less than a distance which would excessively distort said connecting portion, whereby when the displacement of said pressing portion exceeds said predetermined distance, the combined spring force of said resilient connecting portion and said restricting portion acts on said pressing portion.

4,607,729

BRAKE UNIT FOR RAIL VEHICLES

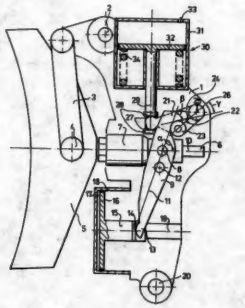
Josef Staltmeir, and Bernd Wosegien, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse AG, Munich, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 679,683

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344616

Int. Cl.[4] B60T *11/10*

U.S. Cl. 188—153 R 5 Claims



1. In a block brake unit for rail vehicles, a block brake member actuating rod, a fluid pressure brake piston having a piston rod, means including a transmission lever for operatively connecting said piston rod to said actuating rod, means for defining a mechanical parking brake device having a parking brake lever, and means for defining a wedge impact coupling between said parking brake lever and said transmission lever, said wedge impact coupling comprises a roller on one of said parking brake lever and said transmission lever and a wedge surface on the other of said parking brake lever and said transmission lever, said transmission lever comprising a first lever arm connected to said brake piston rod and a second lever arm engageable by said impact coupling, there being a pivotable mount for said transmission lever and a pivotable connection between said transmission lever and said brake piston rod, said pivotable mount and said pivotable connection being spaced from each other in the central portion of said transmission lever.

4,607,730

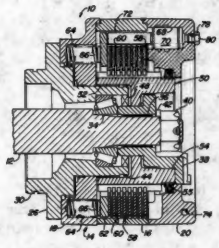
BRAKE MECHANISM

Daniel J. Paisley, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 9, 1983, Ser. No. 559,662

Int. Cl.[4] F16D *65/24*

U.S. Cl. 188—170 1 Claim



1. A park brake mechanism arranged for selectively applying a braking force to a drive shaft, comprising: a fixed housing assembly disposed annularly about an end of said drive shaft; one end of said housing assembly having four cylindrical bores arranged in a generally rectangular configuration and opening axially toward an opposite end of the housing assembly; a fluid passage interconnecting the bores; a piston received in each bore; a threaded port leading axially into a diagonally disposed pair of the bores; screw means for selected threaded reception in each of said ports for stroking an associated piston; a disc pack located in the housing assembly and including first disc members fixed to the housing assembly and second disc members interleaved with the first disc members and fixed for rotation with the shaft; a pressure plate axially, shiftably mounted in the housing assembly adjacent a first end of the disc pack which is remote from the pistons; connecting pins respectively mounted with opposite ends engaging said pistons and the pressure plate; a plurality of coil compression springs mounted between said opposite end of said housing assembly and said pressure plate for effecting engagement of the brake in the absence of fluid pressure acting on the pistons; said housing assembly including a disc pack housing sandwiched between and separable from a spring housing and a piston housing, with the spring and piston housings defining said one and opposite ends of said housing assembly; releasable securing means including a first set of fasteners for securing only the disc pack and piston housings together in a subassembly and a second set of fasteners for fixing the spring and piston housings to the disc pack housing in full assembly; and said first set of fasteners including said screw means whereby said screw means is always readily available for stroking said pistons.

4,607,731

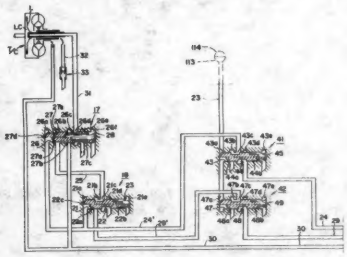
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION HAVING TORQUE CONVERTER WITH LOCK-UP MECHANISM

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Oct. 3, 1983, Ser. No. 538,278

Int. Cl.[4] F16H *45/02, 5/64*

U.S. Cl. 192—3.29 4 Claims



1. In a hydraulic control system for an automatic transmission for a vehicle having a torque converter with a lock-up clutch, the automatic transmission having a plurality of forward speed ratios including a m th speed ratio and a m+1 th speed ratio, where m is an integer, the hydraulic control system having a first portion wherein a fluid pressure is present during operation in one of the m th speed ratio and the m+1 th speed ratio and absent during operation in the other speed ratio, and a second portion wherein a fluid pressure is present during operation in each of the m th speed ratio and the m+1 th speed ratio;

a lock-up valve including a bore having a first signal pressure port and a second signal pressure port, and a spool movable within said bore between a clutch engagement position wherein the lock-up clutch is engaged and a clutch release position wherein the engagement of the lock-up clutch is released, and a spring biasing said spool toward the clutch release position, said first signal pres-

sure port being connected to the first portion of the hydraulic control system;

said spool of said lock-up valve having a first pressure acting area which communicates with said first signal pressure port so as to be exposed to the fluid pressure in the first portion of the hydraulic control system and being urged against said spring toward the clutch engagement position, said spool having a second pressure acting area which communicates with said second signal pressure port; and

auxiliary means responsive to the fluid pressure at said first signal pressure port of said bore of said lock-up valve for normally connecting said second signal pressure port to the second portion of the hydraulic control system, but draining said second signal pressure port when the fluid pressure at said first signal pressure port of said bore of said lock-up valve is higher than a first predetermined value;

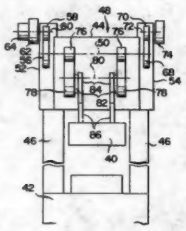
said spring of said lock-up valve being set such that said spool of said lock-up valve assumes the clutch engagement position when the fluid pressure at said first signal pressure port of said lock-up valve is higher than a second predetermined value that is higher than said first predetermined value.

4,607,732

DRIVE MECHANISM FOR A MECHANICAL PRESS

Naoaki Ikeoka, and Akihiko Nakano, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,969
Claims priority, application Japan, Feb. 5, 1982, 57-14046[U]
Int. Cl.⁴ B30B *1/00*; F16D *67/00*
U.S. Cl. 192—12 R **1 Claim**



1. A drive mechanism for imparting up-and-down motion to a ram in a mechanical press wherein the ram is moved up and down relative to a bed, comprising:

(a) a drive housing immovably supported over the ram;

(b) a main shaft rotatably supported within said drive housing;

(c) a drive gear fixedly mounted on one end of said main shaft;

(d) a drive shaft rotatably supported in parallel relation to the main shaft;

(e) a drive pinion fixedly mounted on said drive shaft and meshing directly with said drive gear;

(f) a flywheel having a clutch and fixedly mounted on said drive shaft for imparting rotation to said main shaft via the intermeshing drive pinion and drive gear, the flywheel and clutch being disposed on one side of said drive housing;

(g) braking means disposed on the other side of said drive housing and acting on the other end of said main shaft, said braking means comprising a brake shaft rotatably mounted to said drive housing in parallel relation to said main shaft, gear means connecting said main shaft to said brake shaft, and a brake on said brake shaft;

(h) at least one pair of main pinions fixedly mounted on said main shaft intermediate its ends;

(i) at least one pair of main gears rotatable about a fixed axis within said drive housing and meshing with said pair of main pinions; and

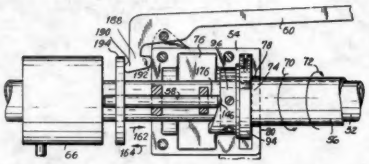
(j) means for translating the rotation of said main gears into said up-and-down motion of said ram, said translating means comprising eccentric means on said main gears, and means for operatively connecting said eccentric means to said ram.

4,607,733

THROTTLE AND BRAKE CONTROL APPARATUS

Peter W. Dodge, 334 E. 9th St., New York, N.Y. 10003

Filed Apr. 4, 1984, Ser. No. 596,739
Int. Cl.⁴ B60K *41/20*
U.S. Cl. 192—3 S **20 Claims**



1. A throttle and brake control apparatus for a vehicle having a handlebar, a brake system and a throttle system comprising housing means mounted on said handlebar; control grip means rotationally mounted on said handlebar, with said control grip means capable of a first direction of rotation and a second direction of rotation; brake system actuation means mounted on said control grip means and disposed to actuate said brake system responsive to rotation of said control grip means in said first direction of rotation; throttle system actuation means rotatably mounted on said control grip means, for operation of said throttle system responsive to rotation of said throttle system actuation means in said second direction of rotation; and driving connection means mounted on said brake system actuation means for driving said throttle system actuation means in said second direction of rotation when said control grip means is rotated in said second direction of rotation and allowing said throttle system actuation means to rotate freely on said control grip means when said control grip means is rotated in said first direction of rotation thereby enabling said control grip means to selectively control both said brake system actuation means and said throttle system actuation means responsive to the direction of rotation of said control grip means with said brake system actuation means comprising circular face cam means.

4,607,734

POWER TRANSMITTING DEVICE IN A COPYING MACHINE

Masahiro Watashi, Nara; Hiroshi Kimura, Osaka; Kiyoshi Shibata, Osaka; Masahiko Hisajima, Osaka, and Kiyonori Yamamoto, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 24, 1984, Ser. No. 573,337
Claims priority, application Japan, Jan. 25, 1983, 58-9666[U]
Int. Cl.⁴ F16D *11/10*
U.S. Cl. 192—67 R **3 Claims**

1. A power transmitting device comprising:

a rotatable drive shaft having a first and second end;

a rotatable driven shaft coaxially aligned with said driving shaft and having a first end proximate said first end of said driving shaft;

a first coupling member connected to said first end of said driving shaft;

a second coupling member connected to said first end of said

driven shaft, said driving shaft and said driven shaft being axially displaceable between a first position wherein said first coupling member and said second coupling member are engaged to transmit power and a second position wherein said first coupling member is disengaged from said second coupling member;

first locking pieces formed on said second locking member to extend radially from the axis of said driven shaft;

second locking pieces formed on said first locking member to extend radially from the periphery thereof toward the axis of said driving shaft, adjacent second locking pieces being separated from each other by a first predetermined angle such that when said driving shaft and said driven shaft are in said first position, said driving shaft and said second coupling member rotate through an angle up to said first predetermined angle before respective first and second locking pieces engage to transmit power from said driving shaft to said driven shaft;

a driving sprocket rotatably mounted on said driving shaft; and

a spring connected at one end to said driving sprocket and at the other end to said driving shaft, for rotating said driving shaft through a second predetermined angle, said spring being compressed responsive to said driving shaft and said driven shaft being axially displaced to said first position.

4,607,735

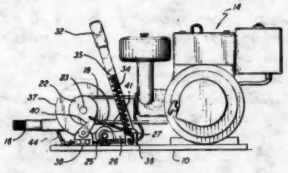
POWER UNIT FOR SELF-UNLOADING WAGON

Timothy W. Coon, Middle Lake Rd., DeRuyter, N.Y. 13052

Filed May 9, 1984, Ser. No. 608,569

Int. Cl.⁴ F16D *67/00*

U.S. Cl. 192—11 **9 Claims**



1. In an auxiliary power device to be used in place of a standard vehicle power take-off, and particularly for use with a self-unloading wagon, a power source having a drive shaft, a gear reduction unit having a driven shaft and an output drive shaft, the reduction unit output drive shaft having a fitting removably connectable to a driven input member of the self-unloading wagon, a first pulley fixed on the power source drive shaft, a second pulley fixed on the driven shaft of the gear reduction unit, a drive belt normally loosely connecting said first and second pulleys, a clutch mechanism movable between engaged and disengaged positions, the mechanism being operable in engaged position to tighten the belt so that the power source drives the gear reduction unit when the power source is operating, brake means for the reduction unit pulley, means operable when the clutch mechanism is in disengaged position to actuate the brake means whereby rotation of the reduction unit pulley is prevented, and actuator means having first and second stable positions, in said first stable position positively holding said clutch mechanism in said engaged position and in said second stable position positively holding said clutch mechanism in said disengaged position and positively actuating said brake means, so that an operator can maintain said power take-off device in an engaged or braked condition without need to remain in attendance at the device.

4,607,736

MULTIPLE SPEED DRIVE SYSTEM

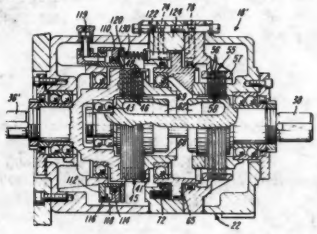
Reginald D. Kelley, Troy, Mich., assignor to Force Control Industries, Inc., Fairfield, Ohio

Continuation-in-part of Ser. No. 284,479, Jul. 17, 1981, Pat. No. 4,463,841. This application Oct. 17, 1983, Ser. No. 542,269

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.⁴ F16D *67/02*

U.S. Cl. 192—18 A **14 Claims**



1. An oil shear clutch-brake unit including a housing adapted to contain a supply of oil, an input drive member and an output drive member supported for rotation within said housing on a common axis, means including a series of interfitting clutch plates and discs within said housing and arranged for selectively coupling said input drive member to said output drive member, means including a series of interfitting brake plates and discs within said housing and arranged for selectively braking said output drive member relatively to said housing, actuating means including a first non-rotating piston supported within said housing and movable axially between a clutch engaging position clamping said clutch plates and discs together and a brake engaging position clamping said brake plates and discs together and through a neutral position, said actuating means further including a plurality of circumferentially spaced and axially extending compression springs urging said first piston axially toward said brake engaging position, a second non-rotating piston disposed within said housing axially of said first piston, means responsive to movement of said second piston and forming a stop for positioning said first piston in said neutral position, and means for circulating oil within said housing outwardly between said clutch plates and discs and said brake plates and discs.

4,607,737
HYDRAULICALLY OPERATING RELEASE ARRANGEMENT, ESPECIALLY FOR A VEHICLE CLUTCH

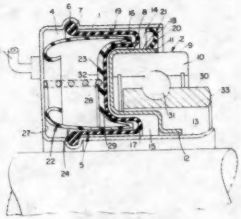
Rüdiger Hans, Niederwerrn, and Werner Kotzab, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,076

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 8221436[U]

Int. Cl.⁴ F16D *25/08*

U.S. Cl. 192—88 A **5 Claims**



1. In an hydraulically operating release arrangement comprised of a housing having a pressure chamber sealed by a roll membrane having an inner surface facing inwardly of said chamber and defining an axis, a biasing means for applying an axial biasing force to said membrane, and a clutch bearing arranged to be axially displaceable in the housing; the improvement wherein a support body is provided in the pressure chamber, the support body abutting said inner surface of the roll membrane with said biasing force applied by said biasing means and said body including means for resiliently engaging a bottom surface of the pressure chamber facing said and inner surface in the axial direction.

4,607,738
FRICTION CLUTCH COVER ASSEMBLIES

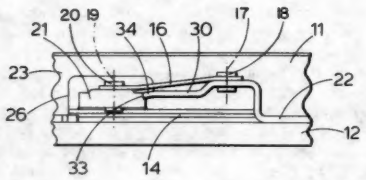
Patrick Muller, Sevran, France, assignor to Automotive Products plc, Leamington Spa, England

Filed Nov. 13, 1984, Ser. No. 670,608

Claims priority, application France, Nov. 10, 1983, 83 17971

Int. Cl.⁴ F16D *13/69*

U.S. Cl. 192—109 R **10 Claims**



1. A friction clutch cover assembly comprising:
a cover having inner and outer surfaces;
first positions of attachment on the cover;
a pressure plate;
second positions of attachment on the pressure plate;
flexible straps, each of which extends substantially tangentially from a respective one of said first positions of attachment to a respective one of said second positions of attachment, said straps allowing a limited axial movement of the pressure plate relative to the cover and providing for the transfer of torque between the cover and the pressure plate;
a diaphragm spring acting against the pressure plate to bias it away from the cover;
and abutment surfaces on the cover, each being adjacent to a respective flexible strap and disposed intermediate the first and second positions of attachment of said strap, and said abutment surfaces being so positioned that in the event of excessive pressure plate movement away from the cover each strap will intermediate its respective first and second positions of attachment abut its respective abutment surface to limit said movement.

4,607,739
COIN ACTIVATED TIMER MECHANISM

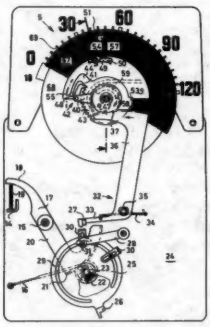
Bernhard Kaiser, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 601,056

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314077

Int. Cl.⁴ G07F *17/24*

U.S. Cl. 194—227 **9 Claims**



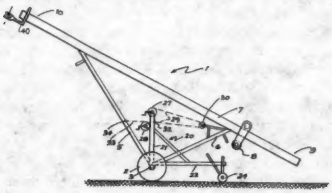
5. A coin activated timer mechanism particularly for use as a parking meter comprising:
a coin receiving device for receiving coins for actuating said mechanism;
sensing means for sensing the value of said coins received by said coin receiving device;
time indicator means including a timer disc rotatable in individual angular steps for providing an indication of a time period dependent upon the value of coins received by said coin receiving device;
clockwork means for returning said time indicator means to a position indicating expiration of said time period;
a function lever for effecting actuation of said timer disc through said individual angular steps; and
a transmission lever interposed between said sensing means and said function lever for actuating said function lever in response to said sensing means;
said function lever being driven by said transmission lever to a position at which said time indicator means is released with said timer disc being at the same time guided to a position indicating a determined time allotment;
said function lever being supported upon a hub and being adjustable in the circumferential direction in variable angular positions;
said mechanism further comprising detachable connecting means for fixing said function lever;
said hub of said function lever having a coaxially extending cutout portion into which a carrier cam of said time indicator means projects.

4,607,740

MOBILE GRAIN AUGER

John E. Jelbart, "Rainbow", Pleasant Hills, New South Wales 2658, Australia

Filed Sep. 19, 1984, Ser. No. 652,090
Claims priority, application Australia, Sep. 19, 1984, PG1468
Int. Cl.[4] B65G 41/00
U.S. Cl. 198—320 5 Claims



1. A mobile grain auger comprising an elongated cylindrical casing having an intake end and a discharge end, a helicoidal auger flight extending through the casing, a motor to rotate the flight to convey grain from the intake end to the discharge end of the casing, two legs defining a calliper frame and having their divergent ends extending upwardly and supporting the casing at spaced positions along its length, a pair of coaxial ground wheels supporting a horizontal pivotal axis about which the frame is tiltable in a vertical plane, first adjustment means formed by a first winch and cable operable to change the calliper angle, a lever including vertically and horizontally extending limbs fulcrummed to said horizontal pivotal axis and a reaction member on said horizontally extending limb positioned to engage the ground between the common axis of the wheels and the intake end of the casing, said vertically extending limb being disposed between said legs of said calliper frame, and tilt adjustment means formed by a second winch and cable connected between the calliper frame and the lever and operable to vary the slope of the casing in a a controlled manner.

4,607,741

ADJUSTABLE ALIGNMENT MECHANISM FOR A POWER REINFORCING MACHINE

Richard M. Elliott; Larry L. Holland, both of Beverly; Thomas J. Gilligan, III, Danvers; John F. Martin, Essex, and Lawrence P. Ciccia, Medford, all of Mass., assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 557,453, Dec. 2, 1983, abandoned. This application Nov. 27, 1985, Ser. No. 802,617
Int. Cl.[4] B65G 21/20
U.S. Cl. 198—345 15 Claims

1. An adjustable guide arrangement for aligning a substrate on a movable base on a rotatable transport mechanism of a deposition machine comprising:

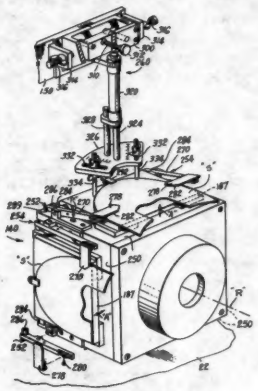
a housing arranged on a frame member of the machine,

a rotatable transport mechanism which supports and transports a substrate,

guide pin support means for aligning a substrate on the movable base of the transport mechanism, including a plurality of vertically extending guide pins, means having horizontally elongated apertures for receiving said guide pins at a variety of horizontal locations,

means for securing said guide pin means at a selected horizontally location within said elongated aperture means and for varying the lowermost location of said vertically extending guide pins relative to said apertured means and said rotatable transport mechanism,

means for moving said guide pin support means from and towards the rotatable transport mechanism, said reciprocably actuated means being movable towards and away from the frame member of the machine by actuation of adjustment means in said housing, said adjustment means, comprising a threaded shaft adapted to move said reciprocably actuatable means with respect to said housing, when said threaded shaft is rotated therebetween.

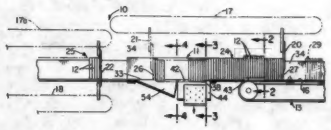


4,607,742

CONVEYING APPARATUS FOR CRACKERS AND RELATED OBJECTS

Edward Curley, Toms River, N.J., assignor to Sunshine Biscuits, Inc., New York, N.Y.

Filed Apr. 24, 1985, Ser. No. 726,550
Int. Cl.[4] B65G 47/24
U.S. Cl. 198—398 4 Claims



1. In a substantially horizontal conveying trough for slidably supporting a plurality of polygonal objects with some such objects vertically oriented while others are horizontally oriented, which the trough has a trough bottom, first and second vertical sides extending from the bottom and an aperture in the trough bottom through which objects can exit, the improvement comprising

(a) an aperture having edges along the trough and edges across the trough, one of said edges positioned with respect to the first vertical side to provide no area of support for an object in the portion of the trough bottom between said first vertical side and said first mentioned edge and the other edge spaced from the second vertical side to provide a support surface for the object;

(b) the first side wall extending a sufficient distance above the trough bottom such that objects in the vertical position are supported by the side wall and the support surface in such a way that the objects rotate to an extent that only a portion of the object moves to a position below the aperture and further such that horizontally oriented objects are supported only on the support surface causing them to exit completely through the aperture; and

(c) ramp means positioned extending from the downstream end of the aperture downwardly from the bottom to a position sufficiently below the aperture such that the portion of the object which moves below the trough bottom as the object is translated over the aperture, en-

gages the ramp means to cause said moving object to be lifted upwardly

whereby vertically oriented objects as moved along the trough drop downwardly partially into the aperture as they first move over the aperture and, as they further move, engage the ramp means to bring the objects up and onto the trough bottom while horizontally positioned objects drop through the aperture as they progress over it.

4,607,743

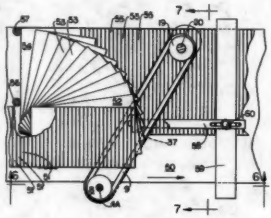
METHOD AND APPARATUS TO ROTATE MOVING OVERLAPPING STACKED BOXES

Ormand K. Elam, 8414 Linn Rd., Middletown, Ohio 45042

Filed May 14, 1984, Ser. No. 610,027

Int. Cl.[4] B65G *47/24*

U.S. Cl. 198—415 **10 Claims**



1. A method of rotating the paper of a stream of moving overlapping stacked paper from one position to another on a conveyor belt comprising:

positioning a rotator having a continuous article contacting surface substantially over said conveyor belt at an obtuse angle with respect to the direction of travel of said conveyor belt;

driving said conveyor belt and said rotator;

initially placing a portion of said stream of overlapping stacked paper on top of said continuous, article contacting surface; and

advancing said stream of overlapping stacked paper on said conveyor belt so that the paper of said stream is progressively rotated by said continuous, article contacting surface from its original position to a second rotated position which is out of contact with the rotator causing the paper to fall back onto the conveyor belt.

4,607,744

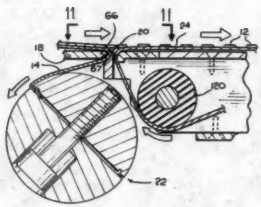
METHOD AND APPARATUS FOR REMOVING INTEGRATED CIRCUIT CHIPS FROM A FLEXIBLE CARRIER

Chong-Il Pak, 3610 Bassett St., #5, Santa Clara, Calif. 95050

Filed Sep. 10, 1984, Ser. No. 649,080

Int. Cl.[4] B65G *47/31*

U.S. Cl. 198—461 **6 Claims**



1. An apparatus for removing integrated circuit chips adhering to an upper surface of a flat, flexible carrier, said apparatus comprising:

base means;

a flat support surface coupled to said base means, said support surface having a first end and a second end;

continuous conveyor means coupled to said base means, said conveyor means having a flat transport surface which is substantially coplanar with said support surface, said transport surface being adapted to move in a direction from a first end of said conveyor means to a second end of said conveyor means;

a separation member coupled to said base means proximate said second end of said support surface, said separation member having a separation edge at an upper surface thereof which is substantially coplanar with said support surface and said transport surface, wherein said separation edge and said first end of said conveyor means are separated by a narrow gap;

take-up means coupled to said base means below said support surface, said take-up means being adapted to grip said carrier and exert a first force on said carrier to pull it through said narrow gap such that a lower surface of said carrier engages said separation edge; and

tensioning means engaged with said support surface, said tensioning means being adapted to exert a second force on said carrier which opposes said first force exerted by said take-up means;

whereby pulling said carrier past said separation edge by said take-up means peels said carrier away from said integrated circuit chips to separate said integrated circuit chips from said carrier, said separated integrated circuit chips being deposited by their forward motion on said transport surface of said conveyor means across said narrow gap.

4,607,745

PENDULUM-MOUNTED BUCKET WITH CONTROL CAM FOR A BUCKET CONVEYOR

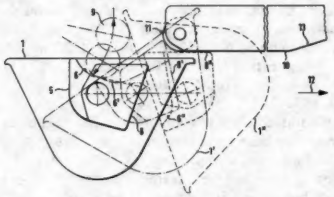
Hans-Holger Wiese, Burgwedel, Fed. Rep. of Germany, assignor to Hans-Holger Wiese GmbH & Co., Burgwedel, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,625

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311544

Int. Cl.[4] B65G *47/40*

U.S. Cl. 198—706 **7 Claims**



1. In a bucket conveyor with two lateral traction elements, a bucket which is pendulum-mounted between the traction elements for translatory movement in a conveying direction and for pivotal movement about an axis extending transversely of said conveying direction, said bucket having a first cam face which extends counter to said conveying direction and slopes upwardly and rearwardly from a point ahead of said axis, as considered in said conveying direction; a cam provided on said bucket and having a substantially straight second cam face; a control member adjacent to the path of movement of the bucket and movable downwardly into engagement with said first cam face to thereby tilt the bucket as a result of movement of said first cam face relative to said control member; and a stationary retaining member adjacent to the path of movement

of said bucket downstream of said control member to be engaged by said second cam face upon at least partial tilting of the bucket by said control member, said retaining member including a roller at the upstream end of said second cam face.

4,607,746

PACKAGING TUBE

Russell A. Stinnette, Plantation, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Sep. 25, 1985, Ser. No. 779,957
Int. Cl.[4] B65H 75/28
U.S. Cl. 206—53 10 Claims

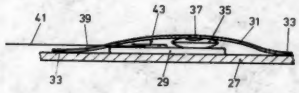
1. A tube for packaging elongated, flexible members, which tube comprises: a flexible tube body capable of being coiled; a projecting member extending outwardly from said tube body and longitudinally along at least a substantial portion of the length of said tube body; and a concave member extending along at least a substantial portion of said tube body in a diametrically opposed position from said projecting member, said concave member being positioned and proportioned to receive said projecting member of another portion of said tube in retentive relation when said tube is coiled.

4,607,747

PACKAGING FOR A PRODUCT AS WELL AS USE OF THE SAME

Andi Steiner, Johannesgasse 3, 8005 Zurich, Switzerland

Filed Feb. 4, 1985, Ser. No. 698,372
Claims priority, application Switzerland, Sep. 12, 1984, 4363/84
Int. Cl.[4] B65D 81/00
U.S. Cl. 206—232 26 Claims



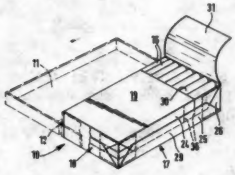
1. A package for a product comprising:
a container having a space therein for receiving said product and comprising interconnected wall portions and including a cover wall portion movable between closed and open positions and a mounting wall portion at least in part formed of resiliently yieldable material;
a substantially flat device having opposite sides and including a battery powered signal generator means for generating at least one of an accoustical signal or an optical signal and switch means for actuating said signal generator means;
means for connecting said cover wall portion and said switch means so that said signal generator means generates a signal when said cover wall portion is moved to said open position;
and means for mounting said device on said mounting wall portion and comprising two parts of said mounting wall portion which are interconnected with each other and which are resiliently and elastically biased toward each other and engage at least portions of said opposite sides of said device.

4,607,748

SHOULDER BOX FOR CIGARETTES OR THE LIKE

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Aug. 15, 1984, Ser. No. 640,918
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 3329454
Int. Cl.[4] B65D 5/72
U.S. Cl. 206—254 4 Claims



1. A cigarette pack comprising:
a shoulder box having a box portion (10) for cigarettes said box portion having a shoulder part (13), and a lid (11) pivotably attached to said box portion said lid surrounding said shoulder part when in the closed position; and
an inner wrapping for encasing the cigarettes to be stored in said box portion, said inner wrapping being shaped to fit within said box portion and having longitudinally extending first and second side walls (29, 29), transversely extending first (28) and second (20) end walls, a lower wall (21) extending in the lengthwise direction from said first end wall to said second end wall and in the widthwise direction from said first side wall to the second side wall, and an upper wall (19) extending in the widthwise direction from said first side wall to said second side wall and in the lengthwise direction from said first end wall a distance less than the length of said lower wall to form a cigarette removal opening (30), said opening extending longitudinally from the transverse edge of said upper wall furthest from said first end wall to said second end wall and transversely from said first side wall to said second side wall, and a closing flap (31) extending longitudinally from said second end wall a distance greater than the longitudinal dimension of said opening to form an edge strip (32) which at least partially overlaps said upper wall;
wherein each of said side walls (29) is comprised of first (24) and second (25) overlapping side tab portions said first side tab portion being an extension of said upper wall, said second side tab portion being an extension of said lower wall and wherein said first tab portion is provided with a Z-shaped fold in its longitudinal direction, said fold having a longitudinal dimension equal to that of said edge strip.

4. A cigarette pack comprising:
a shoulder box having a box portion (10) for cigarettes said box portion having a shoulder part (13), and a lid (11) pivotably attached to said box portion said lid surrounding said shoulder part when in the closed position; and
an inner wrapping for encasing the cigarettes to be stored in said box portion, said inner wrapping being shaped to fit within said box portion and having longitudinally extending first and second side walls (29, 29), transversely extending first (28) and second (20) end walls, a lower wall (21) extending in the lengthwise direction from said first end wall to said second end wall and in the widthwise direction from said first side wall to the second side wall, an an upper wall (19) extending in the widthwise direction from said first side wall to said second side wall and in the

lengthwise direction from said first end wall a distance less than the length of said lower wall to form a cigarette removal opening (30), said opening extending longitudinally from the transverse edge of said upper wall furthest from said first end wall to said second end wall and transversely from said first side wall to said second side wall, and a closing flap (31) extending longitudinally from said second end wall a distance greater than the longitudinal dimension of said opening to form an edge strip (32) which at least partially overlaps said upper wall;

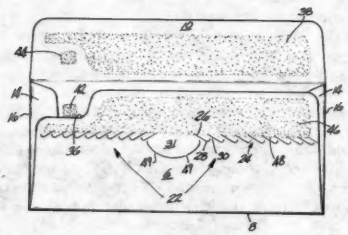
wherein said first end wall (28) is comprised of partially overlapping first (22) and second (23) end tab portions said first end tab portion being an extension of said upper wall, said second end tab portion being an extension of said lower wall and said second end wall is an extension of said lower wall.

4,607,749

EASY OPEN ENVELOPE

Lewis E. Jacob, Topeka, Kans., assignor to American Envelope Co., Chicago, Ill.

Filed Apr. 1, 1985, Ser. No. 718,113
Int. Cl.[4] B65D *27/16, 27/34*
U.S. Cl. 206—610 **5 Claims**



1. An easy open envelope comprising:

(a) a front wall;

(b) a back wall connected to said front wall along a bottom fold line;

(c) side panels connected to said front wall along side fold lines, said side panels being adhesively secured to said back wall;

(d) a closure flap connected to said front wall along a top fold line, said closure flap having a bottom free edge which is substantially parallel to said bottom fold line;

(e) an array of cut scores formed in said back wall, said array extending in a line which is substantially parallel to said bottom fold line, said cut scores being separated from each other by rupturable webs;

(f) adhesive means operable to secure said closure flap to said back wall in a closed position, said adhesive means having a lower edge which is spaced upwardly from said webs; and

(g) said closure flap overlying said array of cut scores completely when said closure flap is in said closed position.

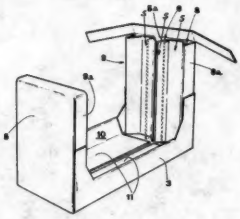
4,607,750

CONTAINER FOR RECEIVING VARIOUS ARTICLES, IN PARTICULAR CYLINDRICAL ARTICLES

Dante Valenti, Imola, Italy, assignor to IN-PAK s.r.l., Imola, Italy

Filed Feb. 27, 1985, Ser. No. 706,172
Claims priority, application Italy, Mar. 6, 1984, 4803/84[U]
Int. Cl.[4] B65D *85/20*
U.S. Cl. 206—443 **5 Claims**

1. Improved container for receiving various articles, in particular cylindrical articles, formed from a single flat blank having longitudinal and transverse dimensions with slits crosswise of the longitudinal dimension and longitudinal and transverse lines of articulation, said longitudinal and transverse lines folded to define a bottom, vertical sides and vertical ends of the container, each vertical edge of said ends having a vertical line of articulation folded to form a limb, of a height corresponding to that of said ends, said limb being folded towards an inside face of each end to define a first strengthening edge, a central area glued to said inside face of said end and a terminal zone, with said first strengthening edge comprising a vertical strip positioned parallel to and inside the corresponding side; an upper transverse edge of each end articulating a corresponding



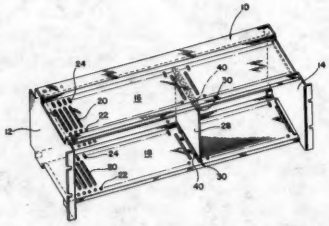
element, constituted by a central section, resting on upper extremities of the pair of limbs attached to said end, and two extremity sections, each turned downwardly in glued contact with the corresponding vertical strip of said strengthening edge; each side being provided with two end pieces placed in glued contact with the corresponding vertical strip of said strengthening edges; each side being centrally folded in the region of the upper edge to form an area constituted by a first part, placed in contact with the inside face of said side and a second part, articulated longitudinally to the first part, glued to said bottom.

4,607,751

ANTIVIBRATION GUIDES FOR SECURING PRINTED CIRCUIT CARDS

William J. Straccia, Sr., Allentown, Pa., and Dale L. Smous, Coral Springs, Fla., assignors to Electro-Space Fabricators, Inc., Topton, Pa.

Filed Apr. 8, 1985, Ser. No. 721,860
Int. Cl.[4] A47G *19/08*
U.S. Cl. 211—41 **8 Claims**



1. A card guide for securing P.C. cards in a card rack comprising, an elongated guide composed of plastic material having an elongated base portion and a pair of vertical side walls defining a U-shaped channel, said U-shaped channel being of uniform width and extending substantially the full length of said guide, said side walls having diverging wall portions forming at least two antivibration buffers with enlarged spaces formed between said diverging wall portions, the outer widths of said diverging wall portions being substantially wider than the outer width of the portions of the side walls forming said U-shaped channel, and the width of each of said enlarged spaces being substantially greater than the uniform width of

said U-shaped channel, a pair of vibration dampeners within each of said enlarged spaces, each of said dampeners having card-engaging surfaces spaced apart by a distance less than the uniform width of the U-shaped channel.

4,607,752

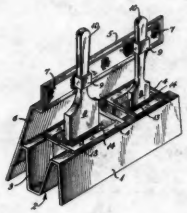
PAINT BRUSH CLEANING RACK

Lionel Sherrow, 737 Dale Rd., Huntingdon Valley, Pa. 19006

Filed Aug. 3, 1983, Ser. No. 519,961

Int. Cl.[4] A47F *7/00*

U.S. Cl. 211—65 **5 Claims**



1. A rack for cleaning paint brushes comprising:

(a) a horizontally elongated, free standing base, said base including cup retaining means for retaining at least one horizontally elongated cup;

(b) at least one horizontally elongated cup removably supported in said cup retaining means;

(c) paint brush holding means mounted on said base extending upwardly thereof, an offset portion of said paint brush holding means located directly above said cup retaining means when said holding means is mounted on said base, said offset portion provided with paint brush mounting means for holding a paint brush in a vertical position;

whereby at least one paint brush may be suspended from said paint brush mounting means to a desired depth in said cup.

4,607,753

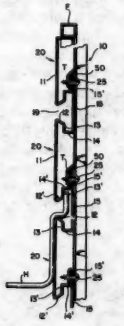
SLOTTED WALL MERCHANDISE DISPLAY PANEL

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 508,571, Jun. 28, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,532

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—87 **11 Claims**



1. A slotted panel for display of merchandise disposed on cantilever hangers of all types detachably mounted on the front of said panel, and said panel detachably connected to supporting means therefor at the rear thereof, comprising

(a) a plurality of superposed horizontally extending substantially parallel slats of rigid sheet material, each formed of trapezoidal section at the front thereof, so that the bases of the trapezoidally contoured slats lie in a common vertical plane with the opposite edges of each of the bases bent at acute angles rearwardly therefrom to form divergent portions between adjacent slats and corresponding rearwardly flaring slots therebetween,

(b) short lengths of said rigid sheet material extending from said divergent portions in vertical planes parallel to said bases,

(c) extensions from said short lengths defining cavities of substantially rectangular section between adjacent slats and said extentions terminating in vertical leaf portions with the extremities of adjacent slat vertical leaf portions in juxtaposition, and

(d) detachable fastening means for interconnecting the juxtaposed extremities of adjacent slats, and

(e) said panel adapted to receive a cantilever merchandise hanger having a terminal member adapted to be seated within any one of said slots at any point of the length thereof.

4,607,754

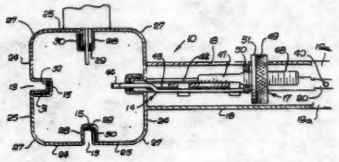
MERCHANDISING DISPLAY SYSTEM AND METHOD

Morris A. Wolf, 7048 Macapa Dr., Los Angeles, Calif. 90068

Filed May 19, 1983, Ser. No. 496,260

Int. Cl.[4] A47F *5/00*

U.S. Cl. 211—183 **14 Claims**



1. In a decorative post for a display system, said post being substantially square in cross-section and having a longitudinal groove in each of its sidewalls the improved construction comprising:

four substantially identical elongated pieces of strip material forming four corner sections of said post and each composed of a metal strip, a decorative outer surface on said metal strip, and an outer protective strip overlying and covering said outer surface, said outer protective strip being removably joined to said decorative outer surface;

each of said elongated sections having a central portion constituting two longitudinal side surfaces joined together by a ninety-degree bend, a U-shaped, outwardly opening channel extending along one side of said central portion and having a bottom wall that is offset inwardly from and substantially parallel to the adjacent side surface, and an L-shaped bend extending along the other side of said central portion and having a free edge portion that is offset inwardly from and substantially parallel to the adjacent side surface;

said L-shaped bend on each corner section projecting into the U-shaped channel of the adjacent corner section on one side, and also receiving in its own U-shaped channel the L-shaped bend of the corner section on the other side;

fastening means joining said L-shaped bends to said U-shaped channels to hold said corner sections together;

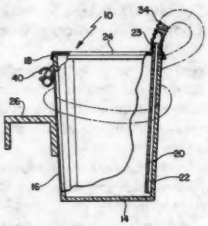
and means defining a series of slots in said channels each extending through both said free edge portion and said bottom wall for attaching said post to other structural members, said protective strips being removable from said central portions to expose said decorative outer surfaces.

4,607,755

CHILDREN'S DRINKING VESSEL

William F. Andreozzi, P.O. Box 479, Greenville, R.I. 02828

Filed Nov. 15, 1984, Ser. No. 672,088
Int. Cl.[4] A47G *19/22*; B65D *23/00*
U.S. Cl. 215—1 A 5 Claims



1. A children's drinking vessel for mounting on a fixed member in a moving vehicle, comprising a container in which a liquid to be consumed by a child user of the vessel is received, said container including a bottom wall, a cylindrical body portion joined to said bottom wall and an upper rim joined to the uppermost end of said body portion, a flexible straw disconnectably mounted on said container and having an inner end that communicates with the liquid located within said container, said straw being constructed and arranged such that the outer end thereof is free and is extendable substantially beyond said container for being received in the mouth of a child user in a position of use, said straw being movable from the extendable position in the position of use to an encircling position around the outer surface of the side wall of said container to a position of non-use, clip means fixed to the outer surface of the side wall of said container normally on the side thereof opposite to the location of the straw when it is in the position of use, said clip means receiving an end portion of the outer end of said straw in a fixed position for locating said straw in the non-use position thereof on said container, and a bracket secured to the side wall of said container for locating said container in an upright fixed position on said fixed member in said vehicle, wherein said container is prevented from tipping in said moving vehicle while said child user drinks the liquid in said container through the straw as extended in the position of use, said bracket being located on said container side wall and spaced from the upper rim of the container to enable the straw to encircle said container and be held in the non-use position by location of the end portion of the straw in said clip means.

4,607,756

CONTAINER

Murray G. Courtman, Auckland, New Zealand, assignor to Brent William Gibson, Auckland, New Zealand

Filed Dec. 3, 1984, Ser. No. 677,734
Claims priority, application New Zealand, Dec. 5, 1983, 206480
Int. Cl.[4] B65D *1/04*
U.S. Cl. 215—6 7 Claims

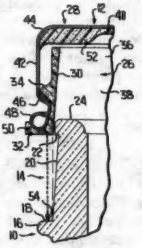
1. A container comprising: at least two integrally formed but separate chambers; at least one chamber being above another to produce upper and lower chambers; a separate opening for each chamber; said chambers being separated one from the other by a mouth portion defining an at least partial spacing between said chambers; said mouth portion defining an open face between adjacent ends of said chambers and a rear joining wall of said container and having upper and lower faces defining, respectively, lower and upper ends of said upper and lower chambers.

4,607,757

ANTI-SPIN INTERFERENCE FIT OF PRESS-SEAL INSERT AND METHOD OF ASSEMBLY

Frank H. Lecinski, Harwood Heights, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Apr. 2, 1985, Ser. No. 719,159
Int. Cl.[4] B65D *41/08*
U.S. Cl. 215—246 9 Claims



6. A closed container assembly comprising a container having a neck finish including a circular cross sectional surface disposed in recessed relation between and defined by opposed axially spaced shoulders, and a preassembled insert and closure assembly closing said container, said insert and closure assembly comprising a formed plastic material insert telescoped over said surface between said shoulders, said insert having a shrink fit on said surface with said shrink fit being one effected by a thermal reaction within said plastic material sufficient to reduce the size of said insert to be less than its as formed size, and a closure telescoped over said insert and having a seal with said neck finish, said closure having a rotational interlock with said insert.

4,607,758

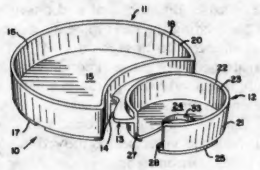
SERVING TRAY

Kenneth V. Stevens, Brooklyn, N.Y., assignor to Grainware Company, Chicago, Ill.

Filed Feb. 7, 1985, Ser. No. 699,081
Int. Cl.[4] A47G *19/03, 19/06*
U.S. Cl. 220—23.83 4 Claims

1. In a stackable serving tray having a food retaining portion, a liquid container retaining portion, and being adapted for stable positioning on a flat surface of in a user's grasp when

both food and a liquid container are positioned thereon, said food retaining portion and said liquid container retaining portion both including substantially horizontal bottom walls and foot means on said bottom walls for providing both a planer bottom mounting surface for said tray and a nesting surface for retaining said tray in stackable relation above any like tray aligned subjacently thereto, said horizontal bottom wall of said



liquid container portion including a first sidewall extending generally upwardly from a substantial portion of the periphery thereof for retaining a standard cup or flat bottom glass thereon, and slot means on said horizontal bottom wall of said liquid container retaining portion extending from the center thereof outwardly to define an opening in said sidewall for receiving and retaining a stemware glass when same is positioned thereon.

4,607,759

SEALING CAP HAVING FRANGIBLE MEANS

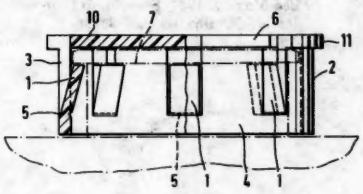
Klaus Boetzkes, Heiss-Str. 6, 8940 Memmingen, Fed. Rep. of Germany

Filed May 8, 1985, Ser. No. 731,718

Claims priority, application Fed. Rep. of Germany, May 14, 1984, 3417812

Int. Cl.[4] B65D *39/06, 47/02, 49/00*

U.S. Cl. 220—266 **13 Claims**



1. A sealing cap made from plastic material for use on valves in keg-barrels wherein a disc is provided for mounting a valve on a barrel, comprising:

a cover plate;

a cylindrical guideway depending from said cover plate;

a plurality of locking elements on said cylindrical guideway biased inwardly of said guideway for gripping engagement under said disc; and

a thin fracture zone adjacent an underneath part of said cylindrical guideway connecting each locking element to said cylindrical guideway.

4,607,760

CLOSURE FOR A PRESSURIZED CHAMBER

John N. Roche, 37 Manorview Dr., Greenville, Pa. 16125

Filed Jul. 25, 1985, Ser. No. 759,028

Int. Cl.[4] B65D *45/28*

U.S. Cl. 220—314 **10 Claims**

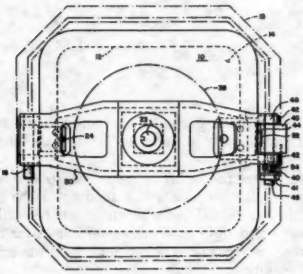
1. Apparatus for closing and sealing the opening of a chamber of a housing within which a desired level of pressure can be maintained comprising:

a. a door pivotally supported on said housing adjacent to said chamber opening, said door being provided with an inner door plate movable relative to said door and supported by said door in facing relation to said opening, said door plate having a chamber opening sealing surface and being movable between a confronting position in which said door plate confronts the chamber opening but in which the chamber opening is not sealed, a sealing position in which the chamber opening is sealed from fluid flow and an open position in which said door plate is neither in said confronting nor said sealing positions;

b. a hinge means affixed to one edge of said door for pivotally supporting said door adjacent said chamber opening so as to allow said door plate to be movable between said open and said confronting positions;

c. a cam finger affixed to said door plate on the opposite edge thereof from the edge adjacent said hinge means;

d. a latch hook means affixed to said door adjacent to said cam finger;



e. a swing latch pivotally mounted on said housing adjacent to said chamber opening on the opposite side thereof from said hinge means and in facing relation to said latch hook means, said swing latch being provided with a latching bar capable of retaining said latch hook means and a cam surface in facing relation to said cam finger such that said swing latch is displaceable between a first position in which said door plate is in its confronting or open positions and said latching bar does not retainingly engage said latch hook and, by the engagement of said cam finger with said cam surface and the movement of said door plate between said confronting and sealed positions, a latched position in which said latch hook is retained by said latching bar;

f. means for displacing said door plate between said confronting and said sealing positions; and,

g. sealing means disposed between said door plate and said chamber opening so as to provide a pressure-resistant seal when said door plate is in said sealing position.

4,607,761

APPARATUS FOR DISPENSING SOLID COMPONENTS FROM A FLEXIBLE SUBSTRATE ASSEMBLY

Steven F. Wright, Glen Ellyn, and Joseph E. McGurk, Stickney, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation-in-part of Ser. No. 597,637, Apr. 6, 1984. This application Feb. 20, 1985, Ser. No. 703,250

Int. Cl.[4] G07F *11/66*

U.S. Cl. 221—25 **3 Claims**

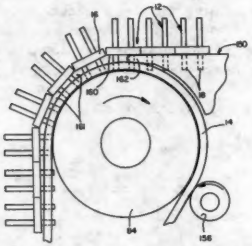
1. In an apparatus for sequentially disposing a plurality of solid members, one at a time, at a predetermined disposition relative to a work station comprising a substrate assembly, including a plurality of solid members removeably retained in a flexible sheet material, said solid members having extending rigid projections inserted into said flexible sheet material;

a sheet material supporting means positioned adjacent said

substrate assembly, said supporting means having a first solid portion disposed at said work station; and

said substrate assembly disposed to overlie the sheet material supporting means to dispose a first solid member at a predetermined position on the support means; the improvement comprising:

said sheet material supporting means comprising a support roller having a solid surface for supporting said sheet substrate assembly;



means for at least partially separating said solid member from said flexible substrate to create a gap therebetween; and

at least one wedge-like lifting member disposed adjacent said support roller surface and extending in the direction to said sheet material, said lifting member positioned ot lie adjacent said rigid projections, and having a free end for insertion in the gap between said sheet material and said solid members.

4,607,762

BOTTLE WITH DOSING DEVICE

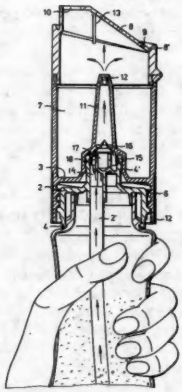
Karlheinz Zalauf, Höchst-Hassenroth, and Franz Steigerwald, Griesheim, both of Fed. Rep. of Germany, assignors to Wella AG, Darmstadt, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,933

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204118

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—48 **23 Claims**



1. A dosing and dispensing device for fluids formed as a closure for a flexible container, comprising:

a base fixable on said container, said base having on its inside inwardly protruding ribs which coact with cams on a neck of said container to prevent turning of said base relative to said container;

an outer portion rotatably mounted on said base and including a calibrated dosage cup having an end and a plurality of calibrations;

a dosage tube positioned in said dosage cup and having a dispensing orifice for feeding liquid into said calibrated dosage cup, said orifice being located higher than the highest of said calibrations of said dosage cup;

a conduit for feeding the fluid to be dispensed from inside of the container to said dosage cup;

a valve positioned between said conduit and said dosage tube and including a valve element and a valve seat, one of said valve element and said valve seat being connected to said cup so that by turning said cup, said one of said valve element and said valve seat is moved in an axial direction to said outer portion to open or close said valve to pass or block the liquid into said dosage tube; and

a lid covering said end of said dosage cup and having a spout at an end facing away from the container and one diametrically opposed opening, said base having a sealing socket, said tube being connected with said outer portion and having an inwardly protruding sealing shoulder at an end facing said valve which in the closed position of said valve sealingly engages said sealing socket and helically moves with respect to said sealing socket when opening said valve, said tube having a tube socket connected with said base, said valve seat at its side facing the container being provided with a sealing lip which engages with said tube socket concentrically with respect to said sealing socket and has a length dimensioned so that it also engages on said tube socket at said valve in a completely opened position.

4,607,763

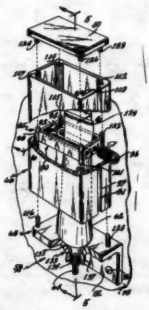
DISPENSER FOR A COLLAPSIBLE TUBE

Carl A. Wright, 408 E. Marquette Rd., Chicago, Ill. 60637

Filed May 17, 1984, Ser. No. 611,476

Int. Cl.⁴ B65D *35/28, 35/56*

U.S. Cl. 222—102 **6 Claims**



1. A dispenser for metering a substance from a collapsible tube having a discharge nozzle, comprising:

housing means for confining the tube in an inverted position, said housing having a base for supporting the tube from below;

said base having means defining an opening therein for receiving the tube nozzle to help support the tube in an inverted upright manner to enable the tube to be readily inserted or removed from the dispenser in a convenient manner;

roller means movably mounted within said housing for helping support the upper portion of the tube and for squeezing the tube as said roller means moves relative to said tube;

first attaching means for attaching removably said housing to said base to permit access to the dispenser for loading or unloading purposes;

wherein said means defining an opening includes a conical portion and a cylindrical portion to help support the tube;

wherein said housing includes a tubular body portion, a top cover plate, and second attaching means for attaching removably said cover plate to the top end of said body portion;

wherein said roller means generally comprises a support frame having a plurality of spaced apart rollers thereon for receiving and squeezing the tube therebetween;

wherein said roller means is generally rectangular in shape, and has a set of integral slide members at the corners thereof, said body portion has a set of means defining open grooves therein for receiving slidably respective ones of said slide members; and

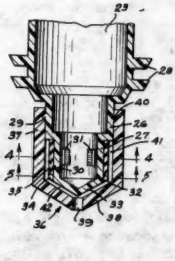
wherein the first attaching means and the second attaching means includes a plurality of connecting devices fixed to the base and to the cover plate, and said means defining grooves receive releasably said devices at the opposite ends thereof to facilitate the assembly and disassembly of said housing.

4,607,764

FLUENT PRODUCT EXTRACTION SYSTEM

William C. Christine, Catasauqua, Pa., assignor to Trinity Foundation, Nazareth, Pa.

Filed Oct. 31, 1984, Ser. No. 666,756
Int. Cl.[4] B65D *25/42, 37/00*
U.S. Cl. 222—207 **3 Claims**



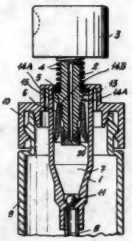
1. A fluent material dispensing apparatus for use with a container having fluent material therein, and means for selectively applying pressure to the fluent material, comprising an elongated tubular body, means for connecting one end of said body to the container in a manner to receive fluent material therefrom, an intermediate portion and a tip portion integrally connected to the other end of said body, said tip portion having a side wall with at least one opening therethrough, an elastomeric band of predetermined thickness encircling said side wall of said tip portion and normally closing said opening, and a cap having side walls and a discharge opening mounted on said intermediate portion and in spaced relationship with said tip portion, whereby pressure applied to the fluent material causes the elastomeric band to expand and permit fluent material to flow from said tip portion and said cap, and wherein the space between the outer surface of said elastomeric band and the inner surface of said cap side walls is less than the thickness of said band.

4,607,765

MANUALLY OPERATED PUMP FOR THE DELIVERY UNDER PRESSURE OF LIQUID SUBSTANCES

Tommaso Ruscitti, Milan, Italy, assignor to S.A.R. S.p.A., Chieti, Italy

Filed Feb. 19, 1985, Ser. No. 702,663
Claims priority, application Italy, Apr. 19, 1984, 21596/84[U]
Int. Cl.[4] B65D *88/54;* **B67D** *5/40;* **F04B** *7/04*
U.S. Cl. 222—321 **4 Claims**



1. A manually operable pump for the delivery under pressure in micronized form of a liquid stored within a container on which the pump is mounted, comprising:

an elongated hollow body having a metering chamber formed therein, said metering chamber being bounded in part by an inner wall of said hollow body;

a tube for carrying said liquid to be dispensed into said metering chamber;

a one-way valve operably disposed between said tube and said metering chamber;

an elongated stem coaxially disposed in said hollow body and axially movable with respect thereto, an upper end of said stem projecting outside said hollow body and supporting a nebulizing cap, said stem having an axial passage therein, a channel extending between said axial passage and an outer surface of said stem communicating said metering chamber and said axial passage, and a stop rib disposed below said channel;

spring means reacting between said hollow body and said stem for biasing said stem away from the bottom of said metering chamber;

a resilient annular seal member slidingly disposed on said outer surface of said stem within said hollow body, said metering chamber being bounded in part by said seal member, said seal member and said stem being relatively axially displaceable between a first position wherein said seal member abuts said stop rib and blocks said channel and a second position wherein said seal member does not block said channel,

said seal member comprising a radially outer lip resiliently sealingly engaging said inner wall of said hollow body in said first and second positions and an inner lip resiliently sealingly engaging said outer surface of said stem in said first and second positions,

said outer surface of said stem comprising frusto-conic surface means coaxial with said stem for radially displacing said inner lip of said seal member when said seal member is moved from said first position toward said second position; and

means for biasing said seal member toward said first position

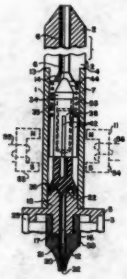
comprising said frusto-conic surface means and said inner lip of said seal member.

4,607,766

ESCAPEMENT DEVICE

J. Paul Jones, Glenmoore, Pa., assignor to Med-Tech Associates, Broomall, Pa.

Filed Apr. 15, 1985, Ser. No. 723,563
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—386.5 5 Claims



1. In an intervenous infusion system:

a drip chamber including a cap on the top thereof;

a connection spike;

escapement means connected between the drip chamber and spike for extracting fluid from the spike and intermittently transferring identical amounts of said fluid to said drip chamber, the escapement means comprising:

an elongated, hollow escapement cylinder, the bottom end of which is connected to the cap of said drip chamber and the top end of which is connected to said spike to extend vertically upwardly when said drip chamber is mounted for use;

elongated shuttle means inside of said escapement cylinder;

guide means on said shuttle engaging the inside wall of said escapement cylinder mounting the shuttle for reciprocating motion along the axis of the escapement cylinder;

conically shaped fluid intake plug means connected to and disposed at the top end of said shuttle;

fluid control mechanism made of flexible material and connected to and disposed at the bottom end of said shuttle and formed with conically shaped fluid discharge plug means;

first means on said cap formed with a conically shaped fluid discharge valve seat means coaxial with the axis of said escapement cylinder to be engaged and disengaged by said discharge plug means and also formed with a drip passageway to pass fluid to said drip chamber;

second means on said spike formed with conically shaped fluid intake valve seat means coaxial with the axis of said escapement cylinder to be engaged and disengaged by said intake plug means;

said shuttle means being dimensioned to permit passage of fluid through said escapement cylinder as between said fluid intake valve seat means and said fluid discharge valve seat means;

said fluid control mechanism also formed with conically shaped skirt surrounding said discharge plug means, the outer perimeter of the skirt having an annular lip closely adjacent to the inside wall of said escapement cylinder to provide an annular space between the wall and the lip;

drive means for moving said shuttle from a first position to a second position, the first position being below said second position:

(a) in the first position said fluid intake plug means being spaced away from said fluid intake valve seat means and said fluid discharge valve plug means engaging said fluid discharge valve seat means;

(b) in the second position said fluid intake plug means engaging said fluid intake valve seat means and said fluid discharge plug means being spaced away from said fluid discharge valve seat means, the fluid discharge valve seat means, the fluid discharge plug means, the skirt and lip, and the inside wall of the escapement cylinder forming a volumetric fluid measuring chamber;

when said shuttle is moving from said first position up to said second position:

(a) said conical shape of said skirt, said flexibility of said skirt, and said space between said lip and the inside wall of said escapement cylinder functioning to permit fluid to pass through the space and flow into said volumetric measuring chamber until said fluid intake plug means engages said fluid intake valve seat means;

when said shuttle is moving from said second position down to said first position:

(a) said conical shape of said skirt and said flexibility of said skirt and fluid in said volumetric measuring chamber causing the said lip to slidingly seal against the inside wall of said escapement cylinder so that fluid in said volumetric measuring chamber is pushed out of the volumetric measuring chamber until said discharge plug means engages said discharge seat means; and

(b) the movement of said fluid intake plug means away from said fluid intake valve means permitting new fluid to flow into said escapement cylinder; and

check valve means connected to said cap and having an exit passage in series with said drip passage way, the check valve means functioning when the shuttle is moving from said second position down to said first position to permit fluid in the drip passageway to flow through the exit passage into said drip chamber and functioning when said shuttle is moving from said first position up to said second position to stop any backflow of fluid in the exit passage.

4,607,767

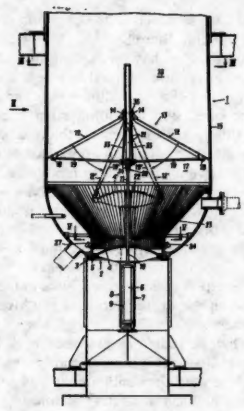
CLOSURE DEVICE FOR THE DISCHARGE OPENING OF AN AUTOCLAVE

Johann Stadler, Hellmonsödt, and Hildegard Schwarz, St. Georgen, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Mar. 15, 1984, Ser. No. 590,060
Claims priority, application Austria, Mar. 18, 1983, 967/83
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—504 11 Claims

1. A closure device for a discharge opening of an autoclave including a reciprocable cover member capable of sealing the discharge opening, the cover being arranged such that the cover is raised vertically into the autoclave during an opening phase, the closure device comprising a pair of plate members hingedly connected together and capable of closing the autoclave when extended outwardly and upwardly to a closing position and capable of opening the autoclave when swung downwardly and inwardly. to an opening position, said hinged connection being disposed transverse to the autoclave, the closure member further including a pair of strutting bars each pivotally connected to one plate member and a bushing, a rod attached to the cover and extending through said bushing, the rod having a first stop positioned between the bushing and the cover and a second stop spaced from the first stop opposite the bushing such that an upward opening movement of the cover brings the first stop into engagement with the bushing to move

said plate members to their opening position and such that a downward movement of the cover u causes engagement of the



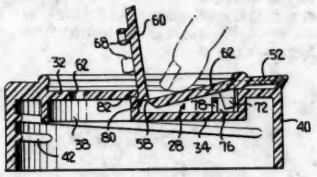
second stop with the bushing to move said plate members to their closing position.

4,607,768

DISPENSING CLOSURE WITH LATCH MECHANISM

James M. Taber, and Stephen J. Kras, both of Chicago, Ill., assignors to Continental White Cap, Inc., Northbrook, Ill.

Filed Jul. 23, 1984, Ser. No. 633,320
Int. Cl.[4] B65D *47/00*
U.S. Cl. 222—556 20 Claims



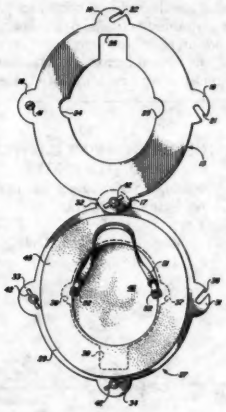
1. A dispensing closure comprising a tubular body having means for attachment to a container, an end wall assembly including a peripheral upper wall member surrounding a well having a stepped bottom, said stepped bottom including an upper panel having at least one dispensing opening therethrough, a lower panel, and an upright wall extending between adjacent edges of said upper and lower panels, a notch in an upper surface of said peripheral upper wall member, and a cover member including a hinge strap hingedly connected to said upper panel at an outer end of said notch, said hinge strap normally extending inwardly through said notch and terminating in a cover panel of an outline corresponding generally to that of said well, said cover panel having on an underside thereof a hinge forming weakened line aligned with said upright wall and dividing said cover panel into a cover element and an opener, said upright wall forming a pivot for said cover panel wherein when said opener is depressed said cover panel will pivot to an upright position uncovering said upper panel to permit dispensing therethrough, and latch means for normally preventing movement of said opener out of said well, and for retaining said cover panel in an open and upright position when said opener is depressed into said well.

4,607,769

HAT BRIM PRESS

David S. DeLisle, P.O. Box 1732, and James P. Marino, 79 West St., both of Lunenburg, Mass. 01462

Filed Aug. 26, 1985, Ser. No. 769,495
Int. Cl.[4] A42C *1/06*
U.S. Cl. 223—12 17 Claims



1. A hat brim press comprising:

a base plate including a planar top surface portion for supporting the bottom of a hat brim;

a cover plate including an annular, planar bottom surface for engaging the top of the hat brim; said cover plate defining a central opening encircled by said bottom surface and adapted to accommodate a crown attached to the hat brim and a notch in said bottom surface and intersecting said central opening, said notch adapted to accommodate an adornment supported by the brim; and

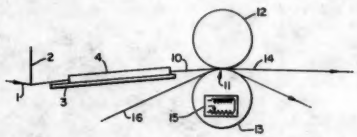
fastening means connecting said base plate and said cover plate and manually adjustable to produce between said top surface portion and said bottom surface forces directed orthogonally thereto, said forces pressing the hat brim between said top surface portion and said bottom surface so as to retain the hat brim in a planar form.

4,607,770

HEAT TREATMENT OF FABRICS AND OTHER SHEET MATERIAL

Edward Chodosh, London, United Kingdom, assignor to Wayne Chodosh, London, United Kingdom

Filed Jun. 12, 1985, Ser. No. 743,937
Claims priority, application United Kingdom, Apr. 18, 1985, 8509980
Int. Cl.[4] A41H *43/00*
U.S. Cl. 223—28 14 Claims



1. Apparatus for heat-treating a laminar material, which apparatus having a pair of co-operating rollers defining between them a nip through which the material to be treated can be passed in a direction of travel; first means for heating the material and second means for holding the rollers together

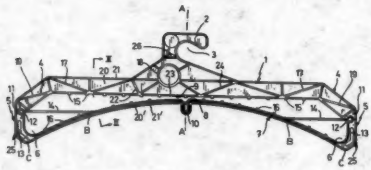
under pressure such that, in use, material passing through said nip is simultaneously heated and compressed; and a feeding arrangement for feeding the material to said nip comprising a pair of co-operating formers between which the material is passed in said direction, each of the formers comprising a series of ribs spaced apart from one another, the average gap between adjacent ribs being less at an edge of each of the formers adjacent to said nip than at an edge of each of the formers remote from said nip, the ribs of one of said formers disposed to lie within gaps defined between opposing ribs of the other of said formers and lateral movement means for effecting movement of at least one of said formers in a direction lateral to said direction of travel during operation of said apparatus.

4,607,771

PRESENTATION DEVICE FOR TEXTILE PRODUCTS AND THE LIKE

Philippe A. J. Massion, Brussels, Belgium, assignor to S.P.R.L. LAMA P.V.B.A., Brussels, Belgium

Filed Sep. 17, 1985, Ser. No. 777,065
Claims priority, application Belgium, Oct. 24, 1984, 0/213.879
Int. Cl.[4] A41D *27/22*
U.S. Cl. 223—91 **12 Claims**



1. A device for the presentation of textile products and the like, comprising:

(a) an upper bar (1);

(b) means (2) for suspension on said upper bar;

(c) a lower bar (7) for holding an item to be presented and whose ends are connected to the respective ends of said upper bar; and

(d) a passage defined between said upper and lower bars,

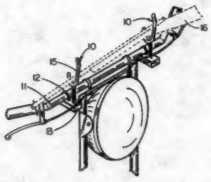
the lower bar comprising an elastic arc with an upper side (8) suitable for holding said item and convex towards a lower side (9) of said upper bar, said lower bar tending to push against a center of said lower side of said upper bar to lock said item between the two bars, wherein said lower bar is connected at its ends to the ends of said upper bar by substantially vertical uprights (5), said uprights having button hole shaped cutouts (12) open towards said passage at points of attachment of said uprights to said upper bar.

4,607,772

RIFLE CARRIER FOR MOTORCYCLE

Dennis Hancock, 491 S. Main, Cedar City, Utah 84720, assignor to George Gates and Dennis Hancock, both of S. Jordan, Utah

Filed Jul. 23, 1984, Ser. No. 633,463
Int. Cl.[4] B62J *7/06*
U.S. Cl. 224—30 A **12 Claims**



1. A utility holding device for attachment to handlebars of a mototcycle for carrying elongated objects, said device comprising:

(a) Clamp means adapted for rigid attachment to the handlebars;

(b) A support base attached to the clamp means and having a threaded opening therein;

(c) A mounting stem having a longitudinal axis and a threaded lower section adapted in size and configuration for a tight, adjustable fit within the threaded opening of the support base, said mounting stem providing elevational adjustment with respect to the base;

(d) A holding member having an upper half and a lower half, said lower half being formed with a U-shape comprising two upright arms and an intermediate base which define a containment area, said lower half being attached at its base to an upper portion of the stem with the stem and arms generally in common upright orientation such that the lower half can be rotated with the stem in the support base about the longitudinal axis to engage and lock the carried object between the upright arms of the lower half of the holding member;

(e) the upper half including an extension of at least one arm of the lower U-shape which is configured as an elbow which bends toward the containment area and provides an upper cocked end to the holding member for engaging an upper part of the contained object and for applying a counter, downward force toward the base of the U-shape to grip and restrain the contained object in a locked position within the holding member;

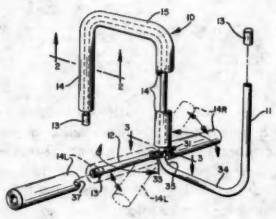
(f) said upper half further including an open section between opposing ends of the holding member to enable insertion of the elongated object therethrough to the containment area.

4,607,773

VEHICLE MOUNTED LONG ARTICLE CARRYING UTILITY BRACKET WITH ADJUSTABLE CROSS BAR

Thomas A. Mason, 3022 Castle Rock, Garland, Tex. 75042

Continuation-in-part of Ser. No. 613,431, May 24, 1984, abandoned. This application Nov. 27, 1985, Ser. No. 802,718
Int. Cl.[4] B60R *9/02*
U.S. Cl. 224—42.45 R **14 Claims**



1. A utility bracket with an adjustable cross bar useable in pairs on a vehicle for carrying long article loads comprising: a stiff material elongate member formed to an "S" shape having a rounded outer surface, said elongate member formed to an "S" shape having two opposite facing open "U" shaped loops that share a common joining side arm, a bottom portion in each "U" loop, an inner side arm and an outer side arm in each "U" loop substantially the same length as said common joining side arm; and a resilient tubular pad extending through most of the length of one of the "U" shaped loops of the bracket with the padded loops thereof extendable, respectively, through two windows of a four door car, through a window and over a side edge of a trunk, or a side window and the side edge of the bed of a truck; wherein said "U" shaped loops of the "S" shaped bracket are generally coplanar; said elongate member is a

round metal extension formed to the bracket "S" shape; said adjustable cross bar mountable on extension of said common joining side arm below the end of said resilient tubular pad on said common joining side arm; and adjustable position mounting means mounting said cross bar on said extension of the common joining side arm.

4,607,774

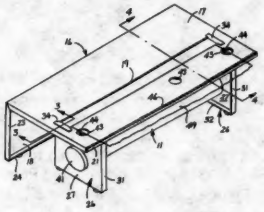
WRAPPING TABLE ASSEMBLY

Ernest J. Garr, 3587 Powell Dr., Lafayette, Calif. 94549

Continuation-in-part of Ser. No. 597,520, Apr. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 466,873, Feb. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 416,669, Sep. 10, 1982, abandoned. This application Feb. 25, 1985, Ser. No. 705,232

Int. Cl.[4] B26F *3/02*

U.S. Cl. 225—47 **21 Claims**



1. A wrapping table assembly for use with a roll of wrapping material, comprising a table member having a generally planar top with a slotted opening formed therein and a depending flange extending along one edge of the top, a pair of legs depending from the table top and cooperating with the depending flange to support the table top in a predetermined position above a supporting surface, means carried by the legs for rotatively supporting the roll of material beneath the table top with the free end of the material extending to the upper side of the table top, and mounting tabs which project from the legs through the slotted opening and interfit with the table top in a manner holding the legs and the table top together and permitting the legs to be moved longitudinally of the slotted opening to accommodate rolls of different widths.

4,607,775

DEVICE FOR CUTTING GLASS FIBERS

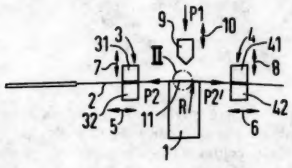
Dieter Krause, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 24, 1983, Ser. No. 497,417

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3221010

Int. Cl.[4] B26F *3/00*

U.S. Cl. 225—96.5 **2 Claims**



1. In a device for cutting glass fibers having a diameter, said device having an anvil positioned between a pair of common clamps, said clamps holding the waveguides parallel to one another on an upper surface of the anvil, at least one of said clamps being movable, means for moving the movable clamp to provide an axially directed tensile force on each of the fibers, means positioned above the anvil and having a notching tool movable in a direction extending perpendicular to the axis of the fibers for notching each of the fibers to obtain a subsequent separation of the fibers at the notches, the improvement comprising a slot in the upper surface of the anvil at least at a seating surface of each glass fiber thereon, said slot being symmetrical relative to the notching plane of the notching tool and being of a selected width for generating an approximately symmetrical tension distribution in the cross-section of each of the glass fibers across said slot at the notch location during the notching operation, said slot width and the fiber diameter having a diameter/width ratio in a range of 0.125 to 0.25.

4,607,776

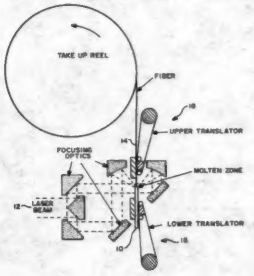
APPARATUS FOR TRANSLATING CRYSTAL FIBERS

John L. Nightingale, Woodside; Martin M. Fejer, Atherton, and Robert L. Byer, Stanford, all of Calif., assignors to The Board of Trustees of The Leland Stanford, Junior University, Stanford, Calif.

Filed Aug. 31, 1984, Ser. No. 645,839

Int. Cl.[4] B65H *20/00*

U.S. Cl. 226—171 **4 Claims**



1. A fiber translation apparatus comprising:

a resilient belt, said belt including a loop and a floating block within said loop,

a support member positioned adjacent said belt for receiving and supporting a crystal fiber against said resilient belt, said support member including a grooved surface for receiving said crystal fiber,

said floating block having a width which is greater than the spacing of said loop whereby said block is offset in said loop when said support member and fiber are brought into engagement with said belt, and

drive means for translating said resilient belt.

4,607,777

STAPLER

Yoshiyuki Ebihara, Tokyo, Japan, assignor to Etona Company, Limited, Tokyo, Japan

Filed Sep. 5, 1985, Ser. No. 772,741

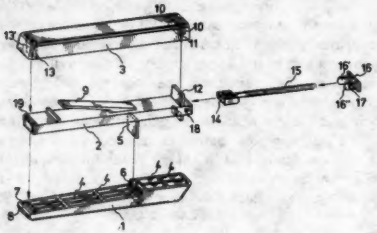
Claims priority, application Japan, Sep. 18, 1984, 59-140418[U]

Int. Cl.[4] B25C *5/02*

U.S. Cl. 227—120 **9 Claims**

1. A stapler comprising a base with an anvil at the forward end, a hollow frame comprising a magazine for containing a clip of staples, and a handle having an integrally formed staple driver, all of which are molded from a synthetic resin material; the hollow frame including a primary fulcrum element extending downwardly from the frame's underside at a point intermediate the opposite frame ends, and an auxiliary fulcrum element extending upwardly from the frame's top face at a point adja-

cent the frame's rearward end; said base including a primary recess formed in it for receiving the frame's primary fulcrum



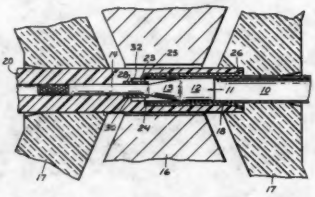
element; and said handle including an auxiliary recess formed in it for receiving the frame's auxiliary fulcrum element.

4,607,778

WELDING FIXTURE FOR NUCLEAR FUEL PIN CLADDING ASSEMBLIES

David J. Oakley, Richland, and Sam H. Feld, West Richland, both of Wash., assignors to United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 22, 1984, Ser. No. 582,419
Int. Cl.[4] B23K *20/08*
U.S. Cl. 228—2.5 **7 Claims**



1. A non-metallic welding fixture for holding a driver sleeve, a nuclear fuel pin end cap with stem and the open end of a length of nuclear fuel pin cladding in precise positions relative to one another for closure welding with the driver sleeve coaxially fitted about the end cap and cladding, comprising:

a rod-shaped holder having a longitudinal cavity extending inwardly from one axial end of the holder;

means within said cavity of the rod-shaped holder for coaxially locating the end cap, the driver sleeve and the fuel pin cladding in required longitudinal positions relative to one another; and

contamination trap means within said cavity of the rod-shaped holder adapted to be located about the end cap stem for retaining contaminant particles ejected axially from the cladding during closure about the end cap.

4,607,779

NON-IMPACT THERMOCOMPRESSION GANG BONDING METHOD

Carmen D. Burns, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 11, 1983, Ser. No. 522,146
Int. Cl.[4] B23K *19/00*
U.S. Cl. 228—106 **3 Claims**

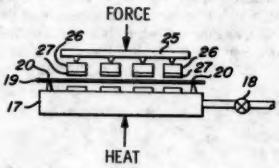
1. A non-impact thermocompression gang bonding process comprising the steps:

locating a plurality of semiconductor device chips in predetermined positions and orientations on a substantially rigid flat surface, said chips having upwardly facing bonding pads;

laying a copper lead pattern array on top of said chips, said array comprising a plurality of copper fingers each one of which has a bonding bump at its end extending in the plane of said array, said copper fingers being formed and arrayed so that their bumps form patterns that mate with the bonding pad patterns on said chips;

locating said array so that said bumps on said metal fingers register with said bonding pads;

applying a resilient pressure distributing sheet on top of said array;



clamping a flat plate onto said pressure distributing sheet, whereby each finger in said array is pressed against its associated bonding pad with a pressure of about 20 to 100 grams; and

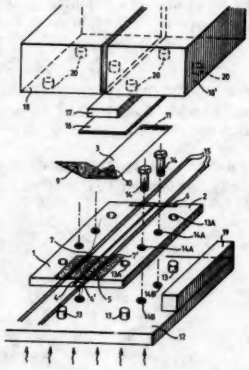
heating said chips in contact with said fingers at about 325° C. for about 15 minutes to bond said fingers to said chips with said temperature being substantially below any metal eutectic temperature in the system.

4,607,780

METHOD OF TEMPORARY SOLDER ASSEMBLING OF RELEASABLE PLATES FOR MECHANICAL RELEASE DEVICE

Jean-Pierre Philipoussi, Mandelieu, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Nov. 8, 1984, Ser. No. 669,521
Claims priority, application France, Nov. 9, 1983, 83 17800
Int. Cl.[4] B23K *1/20*
U.S. Cl. 228—118 **9 Claims**



1. A method of temporarily assembling by soldering releasable plates with soldering material and a flexible junction element, said plates belonging to a mechanical release device for releasing two parts temporarily fixed edgewise to one another, said plates being adapted to be respectively brought edge by edge onto adjacent edges of said parts, the soldering material being disposed on the plates and the flexible junction element being applied onto said soldering material, there being provided a means for causing under the action of a mechanism

automatic progressive lifting of said flexible element, the arrangement of said means being such that, on actuation of the mechanism, the flexible element peels off the soldering material, thereby provoking complete release of the temporarily fixed parts as the flexible element is totally removed therefrom, said assembling method comprising the steps consisting of:

providing on the plates and the flexible junction element reserved areas without any adherence to the soldering material for delimiting connection areas between such plates and such flexible element,

providing in the plates recess means adapted to collect any excess of soldering material and

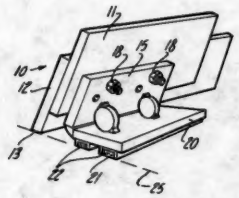
interposing and then melting the soldering material between the plates and the flexible junction element, and then putting the melted soldering material under load so as to distribute said soldering material between the plates and the flexible junction element, but outside of the reserved areas, with the recess means collecting any excess of soldering material.

4,607,781

METHOD OF MANUFACTURING AN ADJUSTABLE MOUNTING SNOW PLOW SKID SHOES

Warren M. Shwayder, 2335 E. Lincoln, Birmingham, Mich. 48008

Filed Jan. 24, 1985, Ser. No. 694,601
Int. Cl.[4] B23K *31/00*
U.S. Cl. 228—175 **4 Claims**



1. A method for adjustably mounting a skid shoe upon a plow moldboard in horizontal alignment with the ground engaging edge of the plow blade which is fastened to and extends beneath the moldboard forward face, comprising:

bolting a mounting plate, which has a lower horizontal edge, upon the rear face of the moldboard;

supporting a lower, skid plate, which has a bottom, ground engaging surface, upon the ground while the plow blade ground engaging edge is supported upon the ground, with the skid plate forming an acute angle with the mounting plate and being closely adjacent the mounting plate;

adjusting the skid plate for aligning its ground engaging surface with the plow blade edge;

moving a generally cylindrically shaped loose, fixing spacing member, which is initially unattached to either plate, within the acute angle space between the plates towards the adjacent edges of the plates until the cylindrical surface of the member forms line contacts with the adjacent surfaces of each of the plates and bridges the space between the plates;

welding the member to both of the plates adjacent the locations of the line contacts between the member and the plates;

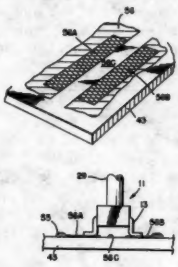
removing the plates from the moldboard and moving the plates to an accessible place so as to make their adjacent edges accessible for complete welding, and then welding the adjacent plates edges together, while the plates are fixed together by the member, for producing a permanently adjusted skid shoe for sliding upon the ground in horizontal alignment with the blade edge.

4,607,782

METHOD AND APPARATUS FOR SOLDERING ELECTRICAL COMPONENTS TO CIRCUIT BOARDS

Bruce L. Mims, Greens Farms, Conn., assignor to Contact Systems, Inc., Danbury, Conn.

Filed May 24, 1985, Ser. No. 737,538
Int. Cl.[4] B23K *1/12, 1/02*
U.S. Cl. 228—180.2 **16 Claims**



1. A method for surface mounting electronic components having depending leads to a printed circuit board having terminal pads comprising the steps of:

providing a layer of solder paste of predetermined thickness;

pressing the outermost portion of the leads into said layer of solder paste;

separating the component leads from the layer of solder paste; and

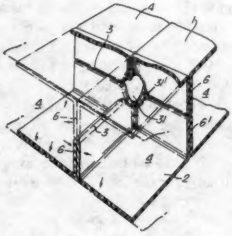
placing the component on the printed circuit board in its placement position with the outermost portions of the leads with solder thereon in contact with the component's terminal pads.

4,607,783

STIFFENED PANEL WITH APERTURES

Martin H. Mansbridge, and John Norton, both of Bristol, England, assignors to British Aerospace PLC, London, England

Filed Nov. 9, 1983, Ser. No. 550,139
Claims priority, application United Kingdom, Nov. 9, 1982, 8231914
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—265 **4 Claims**



1. A method of making a stiffened panel including subjecting two metal sheets, at least one capable of superplastic deformation and diffusion bonding, which are positioned face to face, to a bonding and deforming process during which the sheets are joined to one another at a series of spaced joint lines across their faces, the joint lines being interrupted by non-joined regions of substantial length along their lengths but being otherwise substantially continuous, and during which parts of at least said one sheet between the joint lines and the non-joined regions thereof are superplastically deformed in a

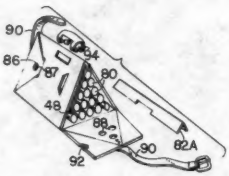
mould to form a series of cavities between the two sheets, portions of at least said one sheet on respective sides of each of the joint lines and the non-joined regions thereof being moved to form sidewalls of two neighbouring cavities, these sidewalls being urged to lie adjacent one another over substantial parts of their areas so that they become diffusion bonded, one to another, to form a common sidewall of neighbouring cavities, the non-joined regions of the joint lines each forming a generally circular or part-circular aperture in each sidewall of a diameter similar to the length of the non-joined region and such diameter being a relatively large proportion of the depth of the sidewall, the material of each sidewall being redistributed by reason of the apertures.

4,607,784

FOLDABLE COMBINATION SEAT AND PORTABLE CONTAINER

Thomas A. Calabrese, 149 Western Ave., Cambridge, Mass. 02139

Filed Aug. 16, 1985, Ser. No. 766,350
Int. Cl.[4] B65D *5/48, 5/46;* A47C *7/62*
U.S. Cl. 229—27 **14 Claims**



1. A foldable combination seat and portable container, easily folded flat and assembled, constructed from a cross-shaped flat sheet of rigid material formed into an elongated rectangular portion and, foldably extending therefrom along a foldline extending from approximately a quarter to one half the length of the sheet, two small rectangular end-forming sections, wherein the elongated rectangular portion is provided with three transverse creases along its length, dividing the elongated rectangular portion into four rectangles comprising three interconnected wall-forming rectangles and an interior-support-forming rectangle at one end, each of which rectangles may be bent relative to the others and interconnected by tabs and slots to form a rigid three-dimensional box structure of triangular cross-section having the interior support forming rectangle connected between an apex of the triangle to a center of a wall opposite the apex, and the two small rectangular end-forming sections are each creased from a center of an outer edge to each of two side edges at a point where each side edge connects with the elongated rectangular portion thereby forming a triangle equal to the triangular cross-section and two foldover triangular tabs, wherein each rectangular end-forming section folds over onto the triangular box structure to form each of two opposing closed ends for the triangular box structure with each triangular tab inserted in a mating slot in a all of the triangular box structure.

4,607,785

FIBERBOARD FLAT WITH JOINED STRENGTHENED CORNERS FOR SETTING UP INTO AN ANGULAR TRAY AND THE SET-UP TRAY

Thomas E. Croley, Worthington, Ohio, assignor to Willamette Industries, Delaware, Ohio

Filed Apr. 19, 1985, Ser. No. 724,868
Int. Cl.[4] B65D *5/36*
U.S. Cl. 229—41 B **6 Claims**

1. A flat for use in setting up a tray-like article which has a substantially flat-wall with side walls at its periphery that are angularly disposed relative to each other and connected at the angular joints therebetween, said flat comprising:

a substantially flat-wall portion of angular peripheral outline having scored hinge fold lines adjacent all its edges;

side-wall producing flaps attached to said flat wall portion around its periphery at the respective scored hinge fold lines and having opposed ends with their respective ends adjacent each and their respective outer edges free;

said flaps comprising first and second flaps around the periphery of said flat-wall portion with the first flaps extending outwardly from their respective scored hinge fold lines in a substantially common plane with said flat-wall portion and with the second flaps turned inwardly about their respective scored hinge fold lines into overlapping relationship with said flat-wall portion;

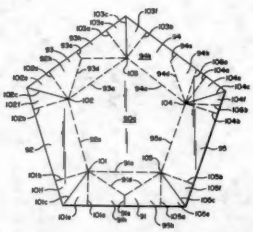
structures at each joint for connecting together said adjacent ends of said first and second flaps and comprising:

an outwardly-extending corner tab on the said end of the second flap;

an inwardly-folded connecting flap section on the said end of the first flap carrying an inwardly-extending corner tab which is in superimposed relationship and in flat contact with said second flap and is secured thereto;

said outwardly-extending corner tab extending outwardly in superimposed relationship and in flat contact with inwardly-folded connecting flap section and being secured thereto;

said outwardly-extending corner tab being connected to said second flap at a scored corner joint fold line and said



inwardly-extending tab being connected to said connecting section at a scored corner joint fold line, the two scored corner joint fold lines being superimposed to provide a common joint fold line;

said common corner joint fold line being in alignment with the scored hinge fold line of said first flap;

said inwardly-folded flap connecting section on the first flap being folded inwardly about an angular scored fold line at an angle relative to said common joint corner fold line to provide said connecting flap section;

said angular scored fold line extending from the flap scored hinge line of the first flap at an angle relative to it and to said common corner joint fold line but terminating at a point within the flap; and

a flap separation extending from the termination point to the edge of said first flap producing relatively foldable sections within the flap;

said tray-like article having an unequal number of the side walls and comprising the flat wall portion with an unequal number of flaps around its periphery;

said unequal number of flaps alternating in the first and second flaps around its periphery and having an odd flap which is originally flat and is divided into independently foldable sections by a single angular fold line which extends from an adjacent common corner joint fold line to a termination point within the odd flap; and

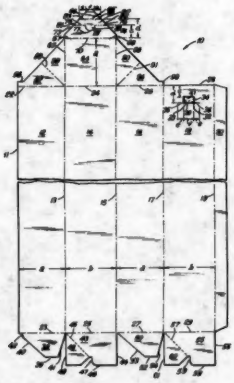
said separation extending from the termination point to the edge of said odd flap producing relatively foldable sections within that flap.

4,607,786

DOUBLE INSERT LOCK CARTON AND BLANK THEREFOR

Sherry M. Weaver, Chicago, Ill., assignor to Waldorf Corporation, St. Paul, Minn.

Filed Mar. 18, 1985, Ser. No. 712,714
Int. Cl.[4] B65D 5/08
U.S. Cl. 229—45 R 15 Claims



1. A paperboard blank for forming a double lock carton, said blank comprising:

rectangular first side panel, rectangular rear panel, rectangular second side panel and rectangular front panel consecutively articulated to one another along parallel fold lines, said front panel including a top edge extending generally perpendicular to the fold line between said second side panel and said front panel, at least one locking cut line extending through said front panel and an aperture disposed in said front panel intermediate said cut line and said top edge;

bottom flaps articulated respectively to said first side panel, rear panel, second side panel and front panel along fold lines;

rectangular top panel being articulated to said rear panel along a fold line extending substantially parallel to the foldable connection between said rear panel and its respective bottom flap;

front flap articulated to said top panel along a fold line extending substantially parallel to the foldable connection of said top and rear panels;

a locking flap connected to said front flap, said locking flap including at least one locking edge spaced from said top panel a distance substantially equal to the distance between the top edge and the locking cut line in said front panel, said front flap including a locking tab defined by at least one cut line extending convexly toward said top panel, and being disposed such that the distance between said locking tab and said top panel is less than the distance between the top edge of said front panel and the aperture therein;

first and second pairs of generally triangular corner connecting panels foldably connected to said top panel and said first and second side panels respectively, the triangular corner connecting panels in each said pair being articulated to one another along fold lines which intersect the foldable connections of said rear panel to said top panel and each including a locking protrusion extending from the portion of said first and second corner connecting panels adjacent the first and second side panels respectively; and

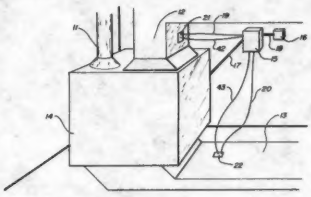
a pair of locking cut lines extending toward one another from the opposed ends of the foldable connection between said top panel and said front flap.

4,607,787

ELECTRONIC CONTROL AND METHOD FOR INCREASING EFFICIENCY OF HEATING

Charles F. Rogers, III, 10 Moraga Dr., Chico, Calif. 95927

Filed Apr. 12, 1985, Ser. No. 722,516
Int. Cl.[4] F25B 19/00
U.S. Cl. 236—11 5 Claims



1. A method of increasing efficiency of a heating system having a burner, a control to turn said burner on and off and an inlet whereby cool air enters said heating system and an outlet whereby warm air exits said heating system, comprising:

positioning a first temperature sensing means in said inlet;

positioning a second temperature sensing means in said outlet;

measuring temperature rise between said inlet and said outlet occurring during normal operation of said heating system in heating a room from a first temperature to a second temperature;

cycling said burner on when said room reaches said first temperature until the temperature differential between said outlet and said inlet reaches a first percentage of said temperature rise which occurred during normal operation of said heating systen and off until the temperature differential between said outlet and said inlet reaches a second percentage of said temperature rise which occurred during normal operation and continuing said cycling until said room reaches said second temperature reached during normal operation.

4,607,788

MIXING VALVE

Brian Bendall, Nr. Newport, and Stephan W. Flannery, Wolverhampton, both of England, assignors to Meynell Valves Limited, Wolverhampton, England

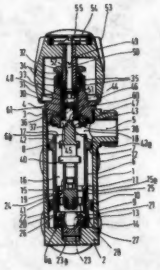
Continuation of Ser. No. 489,100, Apr. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 422,948, Sep. 24, 1982, Pat. No. 4,509,677. This application Sep. 28, 1984, Ser. No. 655,543
Claims priority, application United Kingdom, May 26, 1982, 8215409; Mar. 3, 1983, 8305916
Int. Cl.[4] G05D 23/13
U.S. Cl. 236—12.2 20 Claims

1. A valve for controlling the mixing of hot and cold liquids comprising:

a hollow body having one end closed by a tap-head, inlets for hot and cold liquids communicating via fluid passageways with a mixing chamber in which the aforesaid liquids mix, an outlet for the mixed liquids communicating with said mixing chamber, and including a valve means positioned adjacent the said mixing chamber for controlling the rate of flow of liquids from the respective hot and cold inlets via passageways into the mixing chamber, a temperature responsive device located in the said mixing chamber and arranged to regulate the position of the said valve means to maintain the liquids on the mixing chamber at a substantially stable temperature, and control means operative through said tap head to open and close a shut off valve between said mixing chamber and said mixed liquid outlet and to select the temperature of said mixed liquids up to a predetermined maximum temperature;

wherein said valve means comprises a piston movable be-

tween a first position in which it seats against a first valve seat to restrict the flow of liquid from the cold inlet from entering the said mixing chamber whilst permitting liquid from the hot liquid inlet to enter the said mixing chamber and a second position in which it seats against a second valve seat whereby it prevents liquid from the hot liquid



inlet from entering the said mixing chamber whilst permitting liquid from the cold liquid inlet to enter the said mixing chamber, said movement not exceeding about 0.4 to 0.6 mm., and said first and second valve seats being permanently fixed against axial movement with respect to the said body.

4,607,789

PROPORTIONAL MOTOR DRIVE CONTROL

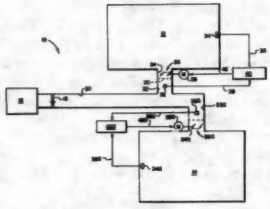
William W. Bowman, Dallas, Tex., assignor to Hoffman Controls Corporation, Dallas, Tex.

Division of Ser. No. 266,461, May 22, 1981, Pat. No. 4,422,571. This application Jun. 9, 1983, Ser. No. 502,555

The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.

Int. Cl.[4] F24F *7/00*

U.S. Cl. 236—49 **5 Claims**



1. In an air conditioning system having an air distribution duct and a temperature controlled zone communicating with said duct, the improvement comprising:

an air flow damper disposed within said duct;

first electronic sensor means disposed within said duct for directly sensing the actual velocity of air flow within said system;

second electronic sensor means disposed within said zone for directly sensing the actual temperature of air within said zone; and

means responsive to the relative outputs of said first and second electronic sensor means for controlling the amount of opening of said damper within said duct for regulating the air flow velocity through said duct.

4,607,790

CYCLE SEQUENCE TIME/TEMPERATURE CONTROLLER

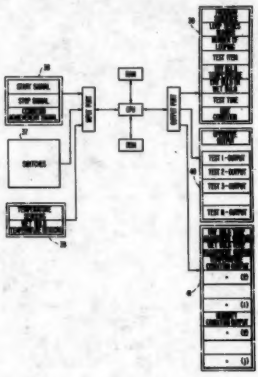
Hiroshi Matsuki, and Takao Sumiyoshi, both of Tokyo, Japan, assignors to Suga Test Instruments Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,299

Claims priority, application Japan, Jul. 20, 1984, 59-149705

Int. Cl.[4] G05D *23/00*

U.S. Cl. 236—94 **1 Claim**



1. A cycle sequence time/temperature controller for a combination corrosion tester, comprising:

a means for setting a loop number and a number of repetitions thereof;

a means for setting a sequence of test items within a loop, a test temperature, a test humidity and an operating time;

a means for outputting a tester operation control signal;

a means for enabling the start of an operation of said tester according to an external start signal;

a means for providing an output corresponding to each test item for said set operating time only; and

a means for providing an adjustment output signal for a dry bulb temperature and an adjustment output signal for a wet bulb temperature, each signal providing corresponding adjustments of said tester at said set test temperature and said set test humidity;

wherein said controller has a display for displaying said loop number and said number of repetitions which are currently being effected, during its operation, and for further displaying: a test item number, the dry bulb temperature, one of either the wet bulb temperature or humidity, and the time elapsed, during its operation.

4,607,791

HYDRONIC ROOM HEATING DEVICE

Phillip E. Gantner, 173 Lake Shore Dr., Box 573, Hammonton, N.J. 08037

Filed Dec. 5, 1984, Ser. No. 678,293

Int. Cl.[4] F24H *3/00*; F24C *1/00*

U.S. Cl. 237—71 **14 Claims**

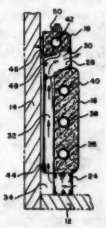
1. A hydronic room heating device for a room having a floor and walls;

(a) a heat radiating panel constructed of a cementous compound,

(b) air radiating means constructed of the cementous compound comprising fins in unitary construction with and in heat conduction relationship with the heat radiating panel the fins being in vertical alignment with troughs between the fins opening downwardly below the panel and upwardly above the panel with the fins facing a wall and

positioned to receive air flowing past the air radiating means and heat the air flowing into the room,

(c) holding means to hold the panel above the floor, and



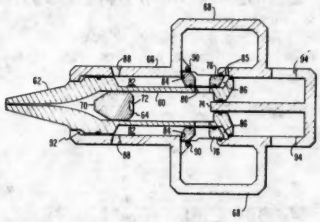
(d) transport piping means embedded in the panel to carry heated liquid in conduits through the panel and conduct heat to the panel.

4,607,792

OSCILLATING PULSED JET GENERATOR

Chapman Young, III, P.O. Box 1173, Steamboat Springs, Colo. 80477

Filed Dec. 28, 1983, Ser. No. 566,350
Int. Cl.⁴ E21B *7/18*
U.S. Cl. 239—101 **10 Claims**



1. A device for generating high-energy pulsed water jets by means of an unsteady acceleration process:

an accelerating means;

a launch tube;

a cumulative-type nozzle carried by and movable with said launch tube with respect to said accelerating means;

a piston wholly contained by and slidable within said launch tube;

means for initiating a liquid package within said launch tube in front of said piston, and establishing a transient hydrodynamic seal of the nozzle tip and a temporary (transient) partial vacuum within said launch tube between said piston and nozzle to ingest a predetermined amount of liquid within said launch tube and substantially empty said nozzle;

means for rapidly accelerating said launch tube and nozzle in a forward direction while said piston and said package, by reason of their inertia, remain substantially fixed in space and become located in a position to be subsequently driven by a high-pressure gas forwardly toward said nozzle;

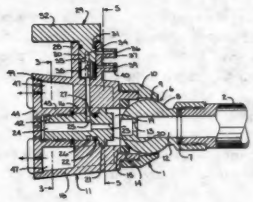
and means for driving said piston and liquid package toward said nozzle upon reaching said position.

4,607,793

SHOWER HEAD WHICH UNIFORMLY DISPENSES LIQUID ADDITIVES

Robert A. Eberle, 414 W. Burnett St., Beaver Dam, Wis. 53916

Filed Apr. 9, 1984, Ser. No. 598,362
Int. Cl.⁴ B05B *7/30*
U.S. Cl. 239—318 **3 Claims**



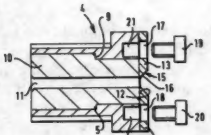
1. A shower head dispenser, comprising a body having a water inlet in one end connected to a source of water under pressure and having an outlet in the opposite end, said body including a central annular section and an outer wall spaced radially outward of said annular section, said body also including at least one radially extending leg connecting said annular section with said outer wall, said annular section defining a longitudinally extending first passage communicating between said inlet and said outlet and the space between said annular section and said outer wall defining a second passage communicating between said inlet and said outlet, said leg having a third radial passage communicating between said first passage and the exterior of said body, a plurality of containers, each containing a liquid additive, a supply line connected to each container, aspirating conduit means interconnecting said third passage and each supply line, and manually operated valve means interconnecting said supply lines and said aspirating conduit means whereby the additives can be selectively dispensed, flow of water through said first passage creating an aspirating action to draw liquid additive from one of said containers through said third passage to said first passage and mixing said additive with the water.

4,607,794

CONTROL OF JETS OF LIQUID

Norman Horwood, 11, Melville Hall, Holly Road, Edgbaston, Birmingham, England

Filed Mar. 2, 1984, Ser. No. 585,775
Claims priority, application United Kingdom, Mar. 4, 1983, 8306082
Int. Cl.⁴ B05B *1/26*
U.S. Cl. 239—455 **11 Claims**



1. Apparatus for deflecting a high pressure jet of liquid, comprising:

(a) a nozzle;

(b) an orifice in said nozzle through which liquid may pass to form said jet;

(c) said orifice having an inlet end for liquid and an outlet end;

(d) a pair of deflecting members, each of said deflecting

members having an inlet-end facing surface and an outlet-end facing surface, said outlet-end facing surface being configured to form a chisel shaped end region of said deflecting member, which region terminates in a sharp edge;

(e) mounting means enabling mounting of said deflecting members relative to said outlet end of said nozzle;

(f) the deflecting members being positioned in a jet deflecting position by said mounting means so they are diametrically opposed to each other and so that a portion of each said chisel shaped end region projects into the path of said jet, each said outlet-end facing surface being inclined away from said sharp edge to prevent said jet, as it passes through a restrictive aperture formed by the opposed sharp edges, from adhering, by capillary action, to said deflecting member; and

(g) securing means for firmly securing each deflecting member relative to said nozzle in said jet deflecting position.

4,607,795

SPRAY HEAD ASSEMBLY

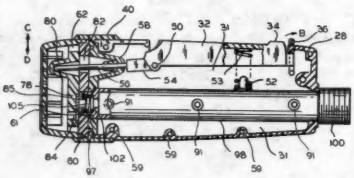
Ralph Ettlinger, Glencoe, and John A. Biela, Niles, both of Ill., assignors to Amco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 533,606, Sep. 19, 1983, Pat. No. 4,527,743. This application Oct. 15, 1984, Ser. No. 661,180

The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.

Int. Cl.[4] B05B *9/00*

U.S. Cl. 239—530 **14 Claims**



7. A spray head assembly comprising an elongated housing, a plate at one end of said housing having spray holes formed therein for giving a generally rectangular spray pattern, movable actuator arm means at the other end of said elongated housing for controlling the flow of water through said spray holes, spring means for normally biasing said movable actuator arm means to a position which shuts off the flow of water, pipe means having a sealing member at one end thereof for conveying water through said housing means to said spray holes, a low friction bushing on the end of said pipe, a sliding valve means positioned in front of said sealing member for sliding over said bushing and opening and closing said pipe means responsive to movement of said actuator arm means, and a blukhead for sealing said housing to said plate containing said pattern of spray holes, said bulkhead including at least a conical flexible section in said bulkhead for transmitting actuator arm movement to said sliding valve means.

4,607,796

METHOD OF MAKING POWDER FROM RUBBER AND VULCANIZATION PRODUCTS

Nikolai S. Enikolopov; Anatoly I. Nepomnyaschy; Lidia A. Filmakova, all of Moscow; Valentin P. Krasnokutsky, Zagorsk; Leonid I. Kurakin, Moscow; Elena L. Akopian, Moscow; Khristofor A. Markarian, Moscow; Saibdzhan S. Negmatov, Tashkent; Suleiman K. Matkarimov, Osh; Yury A. Polivanov, Moscow; Pavel P. Sherstnev, Moscow, and Viliatary B. Pavlov, Moscow, all of U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie "Norplast" , Moscow, U.S.S.R.

Filed Nov. 30, 1984, Ser. No. 676,550

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—3 **8 Claims**

1. A method of making a powder from a source material comprising rubber, rubber vulcanizates and mixtures thereof which comprises compressing the material at a pressure of 0.2 to 0.7 MPa, subjecting the compressed material to a shearing force of from 0.03 to 5 N/mm^2 at a pressure of from 0.2 to 50 MPa at a first temperature of from 80° to 250° C. to form a hot-sheared material and subjecting the hot-sheared material to a shearing force of from 0.03 to 5 N/mm^2 at a pressure of from 0.2 to 50 MPa at a second temperature of from about 15° to 60° C. to form a cooled powder material.

4,607,797

METHOD AND APPARATUS FOR PULVERIZING POLYMERS

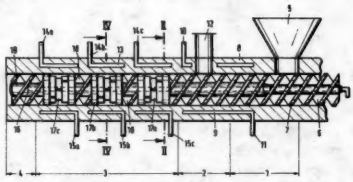
Nikolai S. Enikolopow; Stanislaw A. Wolfson; Anatolie I. Nepomnjaschtschie; Wadim G. Nikolskie; Wiktor A. Teleschow; Lidia A. Filmakowa, all of Moscow, U.S.S.R.; Heinz Brinkmann, Bennigsen, Fed. Rep. of Germany; Eckart Pantzer, Isernhagen, Fed. Rep. of Germany, and Eberhard Uhland, Burgdorf, Fed. Rep. of Germany, assignors to NPO Norplast, U.S.S.R. and Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany

Filed Sep. 7, 1984, Ser. No. 648,286

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332629

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—23 **6 Claims**



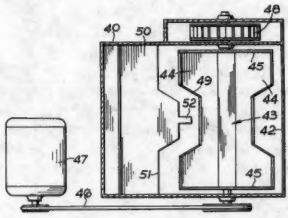
1. A method of producing a powder from polymeric material in an extrusion device, said extrusion device comprising a barrel having an internal surface defining a hollow cavity extending longitudinally within said barrel, screw means rotatable in and extending longitudinally with respect to said hollow cavity, said barrel having opposed first and second end regions, polymeric material feed means disposed in said first end region and communicating with said hollow cavity, powder discharge means disposed in said second end region and also communicating with said hollow cavity, said hollow cavity, intermediate said first and second end regions, being divided into at least first and second zones, heating means in thermal communication with at least said first zone and cooling means in thermal communication with at least said second zone, comprising the steps of:

(a) feedng said material into said first end region and said first zone;

(b) heating said material in said first zone to above the fusion temperature of said material;

(c) conveying said fused material into said second zone;
(d) cooling said material in said zone to a temperature below the solidification temperature of said material;
(e) simultaneously pre-crushing and pulverising said solidified material in said second zone to form a powder; and
(f) discharging said powdered material from said second end region,
said fusion, cooling, pre-crushing and pulverisation being effected in a continuous operation in said extrusion device.

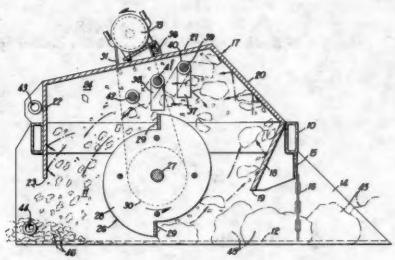
4,607,798
LAMP CRUSHING MACHINE
Kenneth F. Odlin, Wynfleet, Skegness Road, Hogsthorpe, Lincolnshire, England
Continuation-in-part of Ser. No. 312,841, Oct. 19, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 593,689
Claims priority, application United Kingdom, Oct. 29, 1980, 8034719
Int. Cl.[4] B02C *19/14*
U.S. Cl. 241—99 **3 Claims**



1. A lamp crushing machine comprising:
a casing dividable into a central zone and a lower zone,
an inclined chute having an open upper end and an open lower end communicating with the central zone of the casing for receiving lamps introduced thereinto,
a rotor housing disposed within the central zone of the casing,
a rotor consisting of a drum of triangular cross-section having a trio of equidistant radial vanes and circumferential end plates at its opposite ends and being mounted transversely of and substantially the width of the rotor housing,
electrical drive means for driving the rotor,
each radial vane having a central outwardly-facing recess,
a downwardly-inclined plate fixed to the inclined chute and projecting into the rotor housing and having a central outwardly-facing projection and a central finger extending from and outboard of the projection toward and complementing the recesses of the successive vanes rotatable therepast for the crushing of lamps fed between the plate and rotor,
a hopper located in the lower zone of the casing beneath the drum for receiving crushed pieces of the lamps falling from the drum.

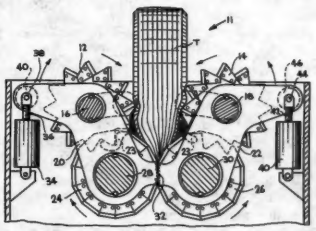
4,607,799
MOBILE STONE CRUSHER
Bobby R. Currie, Rte. 1, Box 181, Kennard, Tex. 75847
Filed May 30, 1985, Ser. No. 739,322
Int. Cl.[4] B02C *13/282*
U.S. Cl. 241—101.7 **2 Claims**

1. A mobile stone crusher comprising a track loader, a stone crusher mounted on said track loader including
a hood having multiple angled stone deflector walls at its front, top and rear and being open at its bottom,
spaced side walls connected with the hood and extending below the bottom of the hood and having skids along their bottom edges and defining between them a through passage adapted to receive windrowed stones during movement of the stone crusher along the windrow,
a transverse horizontal axis impact rotor extending between and journaled on said side walls within the through passage near the longitudinal center of the through passage and the open bottom of the hood,
power drive means for the impact rotor on the stone crusher driving it in rotation counter to the direction of movement of the stone crusher along a windrow of stones, and



pendulum stone breaker hammer means held within the hood above the impact rotor whereby stones fractured by the rotor are deflected by said deflector walls of the hood into the pendulum hammer means and through such means, the stones which are then reduced in size falling in a windrow through the open bottom of the hood behind the impact rotor.

4,607,800
SOLID WASTE COMMINUTION MACHINE
Randel L. Barclay, 5616 Carpenter Rd., Stockton, Calif. 95205
Continuation of Ser. No. 545,071, Oct. 24, 1983, abandoned.
This application Jun. 10, 1985, Ser. No. 742,650
Int. Cl.[4] B02C *7/04*
U.S. Cl. 241—159 **12 Claims**



1. A solid waste comminution machine of the type having two sets of interleaving wheels, including a lower set and an upper set of wheel members, each set including a pair of shafts on which the wheel members are mounted, said pairs of shafts mounted on upright, mutually facing, movable arms, the improvement comprising,
the upper set of wheel members having ripping and shearing tools attached to the circumferential periphery of the wheel members, the pair of shafts associated with the upper set of wheel members mounted on the movable arms, the lower set of wheel members mounted on a pair of fixed, parallel shafts, said shafts supported at one end of the arms with the lower set of wheel members interleaving in a material shearing relation, the shafts forming a fixed pivot axis for said arms, said arms having fixed lengths with inward and outward ends, the outward ends

extending beyond the shafts associated with the upper set of wheels thereby forming leverage regions, and

hydraulic piston means having fixed ends and free ends, the free ends connected to said leverage regions for bringing the arms toward each other to a point at which said upper set of wheels mesh with sufficient force to enable ripping of material between said upper set of wheels.

4,607,801

PULVERIZING MILL

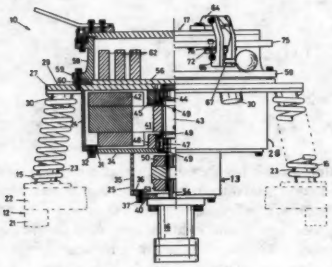
Phillip R. Harvey, 305 South Rd., Mile End South, Australia

Filed Jun. 26, 1984, Ser. No. 624,616

Claims priority, application Australia, Jun. 27, 1983, PG0007

Int. Cl.[4] B02C *17/14*

U.S. Cl. 241—199.1 **11 Claims**



1. A pulverising mill comprising;

a fixed base frame,

a vibrating frame comprising an upper cylindrical housing defining an eccentric weight housing chamber,

support coil springs interocnnecting said base frame and said vibrating frame for resiliently supporting the frame,

a pair of vertically spaced aligned bearing means carried in the vibrating frame,

a vertical, driven shaft having its upper end and an intermediate portion thereof respectively journalled in said bearing means, said shaft extending centrally through said vibrating frame,

an eccentric weight housed within said weight housing chamber and carried by said shaft for rotation therewith, said weight being secured to the shaft between said pair of spaced bearing means,

a pulveriser bowl centrally supported on said upper cylindrical housing of said vibratory frame for vibratory movement therewith and in proximity to said eccentric weight so that, during use of the mill, tilting of said pulveriser bowl is substantially eliminated, said pulveriser bowl having a removable base wear plate, and

an hydraulic motor attached to said vibrating frame and having its drive shaft coupled by flexible coupling means to the lower end of said driven shaft.

4,607,802

TURBINES FOR FIBER SEPARATION

Jean-Pierre J. Lamort, Saint Lumier en Champagne, France, assignor to E et M Lamort, France

Filed Apr. 11, 1984, Ser. No. 599,091

Claims priority, application France, Apr. 22, 1983, 83 06636

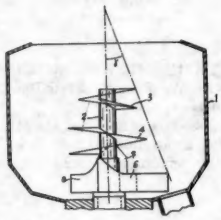
Int. Cl.[4] B02C *23/36*

U.S. Cl. 241—46 B **10 Claims**

1. Pulping apparatus for the processing of recovered waste paper comprising:

a primary pulper open housing; and

a pulper turbine mounted inside and in the bottom of said open housing, said turbine having the general shape of a helix, said turbine including a vertical shaft carrying successively at least two separate helical disks coaxial to the shaft, said disks having a small pitch and extending angularly around said shaft over at most 360° approximately, separated along the shaft by a distance at least equal to 1.5 times the helical pitch of one disk, the base of the turbine shaft carrying a set of radially-extending fins curved into a spiral shape starting from the shaft, a generating line of said fins being substantially parallel to the vertical shaft axis;



wherein the largest diameter of any one of said disks is substantially smaller than the inside diameter of said primary pulper housing,

whereby said recovered waste paper being pulped is imparted first a downward motion in said housing, toward said fins, and then an outward motion from said turbine shaft, toward the inner wall of said housing upon rotation of said turbine in a predetermined direction.

4,607,803

ROTOR/STATOR WINDING AND METHOD AND APPARATUS FOR PRODUCING SAME

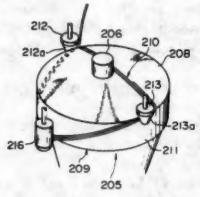
Yoshikuni Nozawa, Nagano, Japan, assignor to Entac Company, Limited, Japan

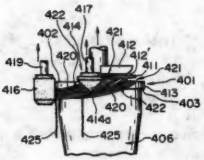
Division of Ser. No. 511,687, Jul. 7, 1983, Pat. No. 4,538,083. This application Mar. 26, 1984, Ser. No. 592,779

Claims priority, application Japan, Jul. 7, 1982, 57-118015; Aug. 26, 1982, 57-147989; Aug. 26, 1982, 57-146990; Nov. 25, 1982, 57-206412; Nov. 25, 1982, 57-206413; Nov. 25, 1982, 57-206414; Nov. 29, 1982, 57-208995

Int. Cl.[4] B65H *81/06*

U.S. Cl. 242—1.1 R **17 Claims**





1. A method for producing a winding for an electric motor, said method comprising the steps of:

pushing a pair of rollers against a first shoulder portion at an end of a winding core, said winding core being rotatable about a first axis;

pushing a further roller against the periphery of said core at a location remote from said shoulder portion;

winding a wire around said core to form a band of wire surrounding said first axis and passing over said shoulder portion; and

utilizing said pair of rollers for holding said band of wire in said shoulder portion away from said first axis while utilizing said further roller for holding a respective portion of said band of wire away from said shoulder portion.

4,607,804

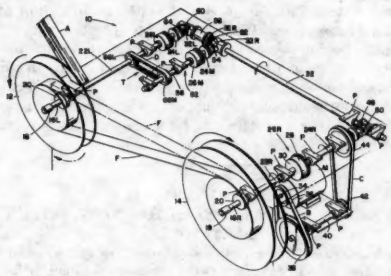
FILM WINDING AND REWINDING APPARATUS

Randall G. Urlik, Englewood, Colo., assignor to Goldberg Brothers, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 666,187, Oct. 29, 1984. This application Feb. 15, 1985, Ser. No. 701,932

Int. Cl.[4] B65H *18/10*; G03B *1/04*

U.S. Cl. 242—67.4 5 Claims



1. In an apparatus for winding film which includes first and second film reel mounting spindles mounted for rotation in spaced substantially parallel relation; first and second film reels selectively mountable upon one of said first and second spindles for rotation therewith in side-by-side spaced relation, said reels being aligned to transfer a length of film wound upon one to the other; an electric motor; first and second input shafts journalled for rotation in coaxial relation to said first and second spindles; a first electrically-actuated electromagnetic combination clutch/brake unit operatively interconnecting said first input shaft to said first spindle; a second electrically-actuated electromagnetic combination clutch/brake unit operatively interconnecting said second input shaft to said second spindle; a first power transfer means operatively interconnecting said motor and said first and second input shafts for simultaneous synchronous rotation; said first clutch/brake unit having a first actuated position effective to frictionally link said first input shaft and first spindle together for conjoint rotation, said second clutch/brake unit having a deactuated position disconnecting said second input shaft from said second spindle and a first actuated position effective to frictionally inhibit relative rotational movement between said second input shaft and said second spindle in opposite directions; and control means electrically connected to said first and second clutch/brake units operative in a first position to actuate both of said first and second clutch/brake units into their first actuated positions whereby the film reel mounted on said first spindle becomes a driven take-up reel onto which the film is wound and the film reel mounted on said second spindle becomes a frictionally-braked supply reel effective to tension any film wound thereon as it passes to said take-up reel, the improvement which comprises: a third input shaft operatively connected to the first power transfer means for rotation in the opposite direction to said second input shaft; a fourth shaft journalled for rotation in coaxial relation to said third input shaft; a third clutch/brake unit having a deactuated position disconnecting said third and fourth shafts and a first actuated position effective to frictionally inhibit relative rotational movement between said coaxially aligned third and fourth shafts; and second power transfer means operatively interconnecting said fourth shaft and second spindle together for rotation in the same direction; said control means being electrically connected to said third clutch/brake unit and operative in a second actuated position to deactuate said second clutch/brake unit and actuate said third clutch/brake unit into its first actuated position so as to frictionally inhibit rotation of the supply reel on said second spindle in the same direction in which the take-up reel is turning.

4,607,805

SAFETY BELT EMERGENCY LOCKING RETRACTOR

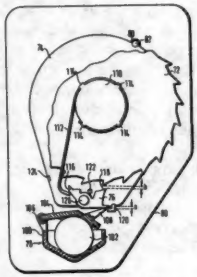
Wilfried Burghardt, Altomuenster; Hans-Hellmut Ernst, Sulfeld, and Josef Mayer, Weichs, all of Fed. Rep. of Germany, assignors to Britax-Kolb GmbH & Co., Dachau, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,006

Claims priority, application United Kingdom, Mar. 13, 1984, 8406493

Int. Cl.[4] B60R *22/40*

U.S. Cl. 242—107.4 A 6 Claims



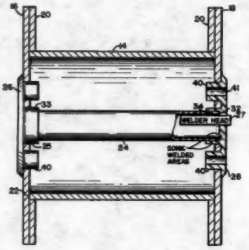
1. An emergency locking retractor for a vehicle safety belt comprising a pair of mutually parallal frame members, a spool, for receiving the belt, mounted for rotation relative to the frame members, primary locking means arranged to block rotation of the spool relative to the frame members and secondary locking means for actuating the primary locking means, the secondary locking means including a ratchet wheel coupled to the spool, an inertia sensor having an output member, a carrier movable relative to the frame members, a stop member mounted on the carrier, a pawl having a pawl tip, a pivotal mounting securing the pawl on the carrier so that the pawl is movable by the output member of the inertia sensor into simultaneous engagement with the stop member and the ratchet wheel whereby subsequent rotation of the spool in the belt protraction direction causes movement of the carrier which in turn actuates the primary locking means, the stop member for the pawl being so positioned relative to the pivotal mounting thereof that the pawl comes into abutment with the stop member before its pawl tip abuts against the periphery of the ratchet wheel between adjacent teeth thereof.

4,607,806

CABLE REEL WITH REINFORCING FLANGES

Carl F. Yealy, New Oxford, Pa., assignor to Merline Industries, Inc., Hanover, Pa.

Filed Dec. 20, 1985, Ser. No. 811,369
Int. Cl.[4] B65H *75/14*
U.S. Cl. 242—117 1 Claim



1. A reel for storage of rope or cable, comprising:

a hollow central cylindrical core having an axial opening therethrough;

a plate at each end of said core secure secured generally perpendicular to the axis of the core, each end plate having a center opening, and means on each end plate to maintain its center in axial alignment with the axis of the core;

reinforcing means holding the end plates securely to the core, comprising:

a cylindrical axial member of plastics material extending through the center opening of both said end plates and through the axial opening of said core, a flange of plastics material secured to each end of the axial member, at least one of said flanges being secured to an end of the axial member by sonic-welding so that both said flange are held in tight contact against the outer surfaces of said end plates and thus reinforce the structural integrity of the reel,

wherein said hollow central cylindrical core (**14**) is fabricated of paperboard material,

wherein said plate (**16, 18**) at each end of said core (**14**) is fabricated of corrugated paperboard material and has at least one off-center opening means for receipt of a lug element (**40**),

wherein said means (**20**) on each end plate (**16, 18**) to maintain its center in axial alignment with the axis of the core (**14**) is fabricated of corrugated paperboard material and is adhesively secured to each of said end plates (**16, 18**),

wherein each of said flange elements (**26, 28**) has a central aperture means formed therein by way of a boss (**33**) having an inner opening means (**34**) sized so as to receive a free end means (**32**) of said cylindrical axial member (**24**) such that said free end means (**32**) is retained internally of each of said flange elements (**26, 28**) upon assembly, and means wherein a sonic welder head (**27**) may be placed in said central aperture means of said flange elements (**26, 28**) to sonically weld said free end (**32**) to said opening means (**34**) of said boss (**33**) while retaining said free end (**32**) within the confines of said flange elements (**26, 28**),

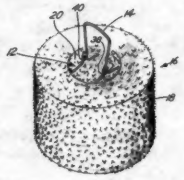
wherein each of said flange elements (**26, 28**) has at least one lug element (**40**) formed thereon and located off-center from said flange central aperture means, said lug element (**40**) being sized so as to be retainably received in the off-center opening means formed in said corrugated paperboard plates (**16, 18**) at each end of said paperboard core (**14**).

4,607,807

CARRYING DEVICE FOR COILED WIRE

Richard D. Reysen, Eureka, Ill., assignor to Keystone Steel & Wire Company, Peoria, Ill.

Filed Jul. 15, 1985, Ser. No. 755,415
Int. Cl.[4] B65H *49/00*
U.S. Cl. 242—129 11 Claims



1. A carrying device for a coil of barbed wire having a substantially hollow core, comprising, in combination:

a chordal support having two end sections and a central section therebetween, whereby each of said end sections may extend into said coil and said central section may extend through said substantially hollow core; and

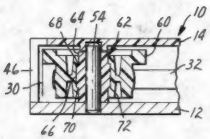
a handle having two end sections and a central section therebetween, each of said end sections including hooking means for interconnecting said handle to said central section of said chordal support, whereby said carrying device and coil of wire may be raised by lifting said central section of said handle.

4,607,808

WEAR-RESISTANT CAPSTAN FOR BELT DRIVEN CARTRIDGE

Leslie M. Collins, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 16, 1985, Ser. No. 692,351
Int. Cl.[4] G03B *1/04;* G11B *15/32;* B65H *20/00*
U.S. Cl. 242—192 3 Claims



1. A capstan assembly rotatably supported by a mounting pin between spaced, parallel walls of a tape cartridge and having a cylindrical outer surface engaging a drive belt, comprising:

a conductive, carbon-filled acetal resin capstan providing said cylindrical outer surface; and

a wear-resistant, acetal resin sleeve interposed between said pin and said capstan, which sleeve engages said capstan and is rotatably supported by said pin.

4,607,809

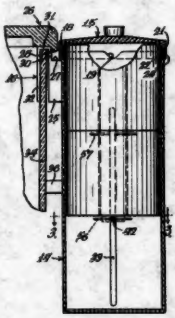
TOILET PAPER HOLDER AND DISPENSER

Charles F. Sineni, and Debra A. Sineni, both of 214 N. Elmhurst Rd., both of Prospect Heights, Ill. 60070

Filed Jan. 16, 1984, Ser. No. 570,815
Int. Cl.[3] B65H *19/04*
U.S. Cl. 242—55.3 10 Claims

8. A toilet paper dispenser for holding and dispensing rolls of paper, comprising: an elongated tubular body member having a length at least as great as the axial length of two rolls of toilet

paper, said tubular body member having a closed end and an open end, said tubular body member being adapted to slidably receive at least two rolls of toilet paper, a removable cover for the open end of the tubular body member so that the rolls of paper are concealed when the cover is in place, a bracket extending from the tubular body member adapted to fit over



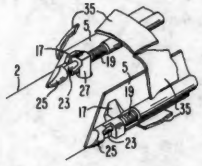
the tank of a conventional residential toilet tank and under the tank cover therefor, and a selectively axially movable member extending through the tubular body member under the roll adjacent the closed end of the tubular body member for moving the paper rolls toward the open end of the tubular body member.

4,607,810

PASSIVE CONSTRAINT FOR AERODYNAMIC SURFACES

Alson C. Frazer, Santa Ana, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Division of Ser. No. 472,891, Mar. 7, 1983, Pat. No. 4,523,728.
This application Jan. 7, 1985, Ser. No. 689,351
Int. Cl.[4] F42B *13/32*
U.S. Cl. 244—329 **1 Claim**



1. Passive constraint apparatus for holding aerodynamic surfaces of an airframe in a retracted position with respect to a generally tubular outer surface of the airframe during an initial, relatively low velocity, phase of the airframe's flight, while permitting deployment of the aerodynamic surfaces into a position generally orthogonal to the airframe's outer surface during a subsequent, relatively high velocity, phase of the airframe's flight, said passive constraint apparatus comprising:

less than totally cured shrink tubing which holds the aerodynamic surfaces retracted during said initial phase, wherein the diameter of the shrink tubing, when totally cured, is significantly less than the cross-sectional diameter of said airframe outer surface; whereby

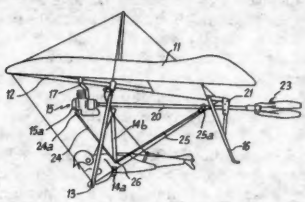
during said subsequent phase the shrink tubing attempts to shrink to its totally cured diameter but is prevented from doing so by said airframe outer surface, causing tensile failure in the shrink tubing and thereby permitting deployment of the aerodynamic surfaces.

4,607,811

PROPULSION UNIT FOR HANG GLIDER TYPE AIRCRAFT, AND AIRCRAFT FITTED WITH THE PROPULSION UNIT

Yves J. Rousseau, La Gironie, 493300 Etriche, France

Filed Sep. 26, 1984, Ser. No. 655,204
Int. Cl.[4] B64C *17/00*
U.S. Cl. 244—13 **7 Claims**



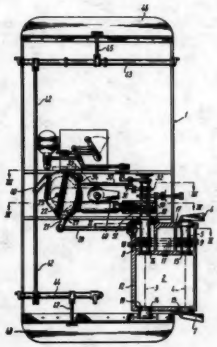
1. A propulsion unit for an aircraft of the hang glider type including a wing with a keel in its plane of symmetry serving as a fastening point for a trapeze and a harness by which the pilot is suspended below the wing, the trapeze and the harness being disposed in conventional manner for suspending a pilot in the prone position, wherein the motor propeller unit is mounted in such a manner as to be movable at least in the longitudinal direction along the keel axis under pilot control thereby enabling the pilot to displace separately both the center of gravity of the motor propeller unit and his own center of gravity between an extreme forward position ahead of the center of lift of the wing and an extreme rearward position behind the center of lift.

4,607,812

HINGE MECHANISM FOR AN AIRCRAFT DOOR

Frans W. De Haan, Mijdrecht, and John Blackburn, Uithoorn, both of Netherlands, assignors to Fokker B.V., Netherlands

Filed Oct. 12, 1983, Ser. No. 541,105
Claims priority, application Netherlands, Oct. 13, 1982, 8203956
Int. Cl.[4] B64C *1/14*
U.S. Cl. 244—129.5 **7 Claims**



1. An aircraft door of the type which during flight is pressed all around against a door case under the influence of cabin pressure, which door during opening and closing thereof moves by means of a hinge mechanism with two mutually parallel rotational axes and an intermediate hinge part, one of said rotational axes being connected to the door and the other being connected to the door case, such that when the door is opened during a first motion phase the intermediate hinge part carries out a rotational movement around the rotational aixs

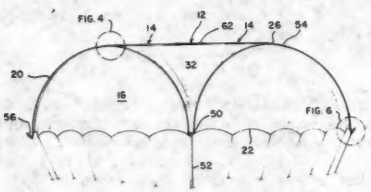
connected to the door case, whereby simultaneously the angle between the door and said intermediate hinge part is decreased, and thereafter in a second motion phase said intermediate hinge part carries out a rotational movement in the opposite direction around the rotational axis connected to the door case, and when the door is closed said movements are carried out with reversed rotational directions and in reverse order wherein a hydraulic or mechanical transmission mechanism is present in the hinge structure coupled with the two rotational axes for coordinating the rotation around both rotational axes in the first motion phase and wherein hydraulic means is coupled to both rotational axes of the hinge mechanism, which hydraulic means are hydraulically coupled mutually such that the movement of the door relative to the hinge mechanism and the movement of the hinge mechanism relative to the door case is defined at least during the first motion phase and wherein the movement of the door during the second motion phase is damped by means of a piston/cylinder combination mounted within the door, with one side coupled to the intermediate hinge part.

4,607,813

PARACHUTE ASSEMBLY

William W. Jeswine, Issaquah, Wash., assignor to William W. Jeswine, Seattle, Wash.

Filed Mar. 10, 1983, Ser. No. 474,243
Int. Cl.[4] B64D *17/08, 17/16*
U.S. Cl. 244—145 **9 Claims**



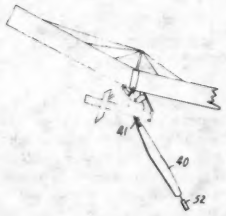
7. A parachute assembly comprising:
(a) a canopy having an outer periphery; and
(b) a plurality of collapsible bands of flexible material secured to the outside periphery of the canopy in the form of loops which project outward to speed the opening of the chute and which are fastened to the main canopy along one side and are of a sufficient length so as not to reduce the circumference of the canopy.

4,607,814

BALLISTIC RECOVERY SYSTEM

Boris Popov, 14155 44th St. South, Afton, Minn. 55001

Filed Oct. 13, 1983, Ser. No. 541,787
Int. Cl.[4] B64D *17/72*
U.S. Cl. 244—147 **3 Claims**



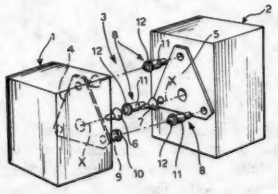
1. A ballistically deployed parachute recovery apparatus adapted to be attached to an air vehicle such as a glider, hang glider or ultralight, comprising
a. a parachute container;
b. a parachute normally folded within said parachute container and adapted to be secured to an air vehicle;
c. a projectile housing and an explosively activated projectile contained within said housing, said projectile being attached to said parachute for pulling said parachute from the parachute container when ballistically discharged at approximately 300 feet per second;
d. a mechanically activated first explosive cartridge within said projectile housing, adapted to explode upon mechanical activation and drive said projectile from said housing at approximately 300 feet per second;
e. means for manually exploding said first cartridge and driving said projectile from said housing to deploy said parachute;
f. an electrically activated explosive second cartridge effectively within said projectile housing, adapted to explode upon receiving an electrical charge having an amperage greater than a predetermined firing amount and adapted not to explode if said charge is less than said predetermined amount as when the electrical circuitry is being tested by an operator, upon said second cartridge exploding, said projectile is then driven from the projectile housing at approximately 300 feet per second;
g. a battery;
h. an electrical switch electrically connected between said second cartridge and said battery to permit the operator of the vehicle to selectively activate and explode said second cartridge and thus deploy said parachute; and
i. a test circuit connected to said battery and said second cartridge to allow an operator to selectively pass an electrical charge, less than said predetermined firing amount, through said second cartridge to check the electrical connections and operative status of said recovery apparatus without exploding said second cartridge.

4,607,815

DOCKING SYSTEM FOR SPACE MODULES

Edmondo Turci, and Guido Fubini, both of Turin, Italy, assignors to Aeritalia Societa Aerospaziale Italiana p.A., Turin, Italy

Filed Apr. 19, 1984, Ser. No. 601,820
Claims priority, application Italy, Apr. 19, 1983, 67426 A/83
Int. Cl.[4] B64G *1/64*
U.S. Cl. 244—161 **13 Claims**



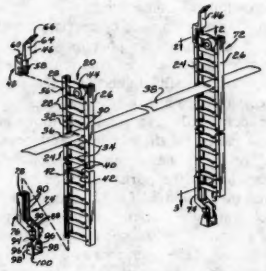
1. A docking system for space modules comprising a docking device having male and female coupling members carried by the two space modules respectively, said coupling members having complementary conical surfaces for contacting each other in the coupled condition, complementary locking means adapted to secure said coupling members against axial separation while permitting relative rotation therebetween, said locking means comprising resilient retaining means carried by one of said coupling members and arranged to snap engage a corresponding seat member rotatably mounted in the other coupling member, reference means on said conical coupling surfaces for providing the correct alignment for said modules, and a plurality of connecting devices arranged to lock the two space modules in a precise aligned position wherein each connecting

device comprises a coupling seat located in one of said modules and a coupling shank carried by the other module and axially moveable between a withdrawn inoperative position and an extended coupling position, the coupling shank having a head which is expandable within said coupling seat to form the connection between the two modules.

4,607,816
WINDOW BLIND FITTINGS

Richard K. Haines, Elkhart, Ind., assignor to Elkhart Door Corporation, Elkhart, Ind.

Filed May 7, 1984, Ser. No. 607,433
Int. Cl.[4] E06B *7/28*
U.S. Cl. 248—208 **3 Claims**



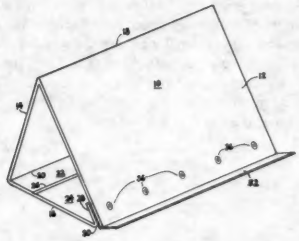
1. Installation structure for mounting a window blind structure in a window frame of a vehicle such as a van, which window blind structure includes an upright post having upper and lower ends, said installation structure comprising a first bracket of molded plastic material mounted on the upper end of said post, said first bracket being channel-shaped and having a pair of spaced flanges and an interconnecting web and substantially embracing said upper end of said post, said first bracket and said upper end of said post having cooperating means securing said first bracket on said upper end of said post, there being a top wall spanning and integral with said web and said flanges and extending forwardly of said flanges, said top wall forwardly of said flanges having an integral leg extending upwardly therefrom and angularly disposed foot means thereon for mountign aganist a window frame surface, a second bracket of molded plastic material mounted on the lower end of said post, said second bracket being channel-shaped and having a pair of spaced flanges and an interconnecting web and substantially embracing said lower end of said post, said second bracket and said lower end of said post having cooperating means securing said second bracket on said lower end of said post, and a member pivotally secured to said second bracket for mounting against another window frame surface.

4,607,817
COLLAPSIBLE PODIUM

Salvatore A. Aquino, 337 Trevor La., Bala Cynwyd, Pa. 19004

Filed May 6, 1985, Ser. No. 731,070
Int. Cl.[4] A47B *97/04*
U.S. Cl. 248—459 **4 Claims**

1. A collapsible podium comprising a front panel, a back panel in hinged relationship along its top edge with the top edge of the front panel, and a flat floor panel in hinged relationship essentially along its rear edge with essentially the bottom edge of the back panel and having in hinged relationship thereto a front extension disposed to have a front surface thereof adjacent the bottom backside of the front panel with said extension attached to the front panel, with said floor panel having a rear portion and a front portion in hinged relationship to each other, and further with said front panel having disposed along essentially its lower edge a lip projecting for-

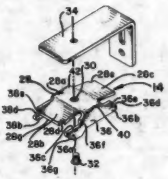


wardly at essentially a right angle with the front panel and at an upward angle from a horizontal plane.

4,607,818
INSTALLATION BRACKET FOR VENETIAN BLIND HEAD RAIL

George Georgopoulos, Pine Brook, N.J., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.

Filed Aug. 30, 1983, Ser. No. 527,754
Int. Cl.[4] F16M *13/02*
U.S. Cl. 248—544 **4 Claims**



1. For use in combination with a head rail of a venetian blind, said head rail being of essentially U-shaped cross section and having a bottom, two parallel spaced apart substantially vertically extending side walls with flanges extending inwardly from upper ends of said side walls to form flange edges: a bracket for mounting said head rail to a support, said bracket comprising:

a relatively flat top portion with means for fastening said top portion to said support and having opposite ends adapted to respectively at least partially cover said flanges outwardly of said flange edges;

and first and second spaced apart essentially parallel side portions depending from said top portion; each side portion having first and second opposite ends with outer edges spaced apart a distance smaller than the distance between said side walls but greater than the distance between said flange edges, the first and second ends of said first side portion being respectively turned by 180° with respect to the first and second ends of said second side portion, each first end having a first substantially horizontally extending edge forming a supporting shelf for one of said flanges and a second edge substantially perpendicular to said first edge thereof for guiding said one flange horizontally, each second end having a first edge essentially aligned with said first edge of said first end for forming a supporting shelf for the other flange and a second edge substantially perpendicular to said first edge thereof, said second edges of said second ends being spaced further from their respective outer edge than the second edges of said first ends are from their respective outer edge so as to leave a gap between said second edges and the respective adjacent flange edge;

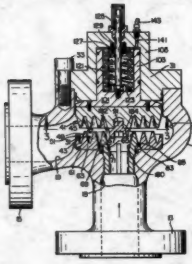
whereby said top portion can first be fastened to said support; one of said flanges can be suspended below one end of said top portion on said first end of one side portion and said second end of the other side portion; and said head rail can then be swung about said flange edge of said one flange; and said other flange can then be forced over said second end of said one side portion and said first end of the other side portion and placed below the other end of said top portion on said second end of said one side portion and said first end of said other side portion.

4,607,819

HIGH PRESSURE RADIAL FLOW VALVE

Richard W. Spils, 2225 Spenard Rd., Anchorage, Ak. 99503

Filed May 7, 1985, Ser. No. 732,171
Int. Cl.[4] F16K *47/04, 47/08*
U.S. Cl. 251—121 **11 Claims**



1. A valve having a valve body,

said body being formed with a cavity and also being formed with an inlet to said cavity and an outlet from said cavity, both being in direct communication with said cavity,

means within said cavity providing for pressure reduction by multiple stages,

said means comprising a single pair of opposed plates one of which has a central port in direct communication with said inlet,

said plates having alternating annular teeth and grooves in interdigitated relationship providing a single generally sinuous radial flow path from said port to the peripheries of said plates and from said peripheries directly to said outlet,

said teeth and grooves being of truncated triangler shape in cross section,

the teeth of one plate mating with the grooves of the other plate so that said plates when closed reduce the depth of said flow path to substantially zero,

and means for adjusting the degree of interdigitation to vary the depth of the sinuous flow path and thus alter the degree of multiple stage pressure reduction,

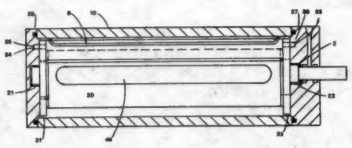
and means providing, during the slightly opened position of the valve, flow channels which are long relative to the length of the transition zones, but wherein the ratio decreases as the valve progressively opens, the just mentioned means including the feature that each set of the sides of the teeth of one plate are parallel to the associated sides of the other plate, and wherein the sides are steep by having a minor acute angle to the vertices of the teeth.

4,607,820

ROTATING GATE VALVE

Rudolf F. Nissen, 3639 Pescadero Rd., Pescadero, Calif. 94060

Filed May 20, 1985, Ser. No. 735,676
Int. Cl.[4] F16K *31/524*
U.S. Cl. 251—251 **10 Claims**



1. A pressure-tight valve for alternately sealing and opening pressure-tight chambers, comprising:

a housing having an elongated cylindrical cavity and having a first and second access port located on substantially opposite sides of the axis of rotation of the cavity, each port being substantially aligned with the other, the first of which ports is surrounded by a seat area;

a rotor, concentrically and rotatably mounted within the cylindrical cavity of the housing, and constructed such that there exists an open area corresponding in dimension and in location to the ports in the housing and so positioned that the openings of the housing and the open area of the rotor are substantially aligned during a portion of the rotor's rotation with respect to the housing, and having at each side of the open area two eccentrically-shaped cam lobes, the high points of which are generally orthogonal to the the plane of the effective area of the opening of the rotor;

a gate, having a cover element which is shaped substantially on a section of a cylinder the outside diameter of which cylinder is substantially the same as the diameter of the cylindrical cavity, and having an open position, in which the cover does not obstruct the passage formed between the first and second ports, and a closed position in which the cover entirely covers the first port and rests against the seat area of the first port, and having two end plates rigidly affixed to said cover, each end plate having a cam follower surface, adapted to engage the cam surfaces of the rotor, which cam follower surfaces are parallel to one another and are substantially perpendicular to the effective area of the opening of the port when the gate is in its closed position, which gate lags the rotation of the rotor with respect to the cylindrical cavity during the initial portion of rotation from the closed position of the gate and during the final rotation of the rotor toward the closed position, said gate being free to move away from the wall of the cylindrical cavity when the cam followers are disengaged from the cam surfaces.

4,607,821

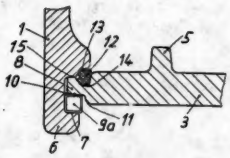
SHUTOFF VALVE

Walfried David, Maxdorf, Fed. Rep. of Germany, assignor to Bopp & Reuther GmbH, Mannheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 574,561, Jan. 27, 1984, abandoned. This application Mar. 11, 1985, Ser. No. 709,778
Int. Cl.[4] F16K *3/12, 27/12*
U.S. Cl. 251—329 **31 Claims**

1. A shutoff valve for a flow medium, comprising a spindle; a shutoff member displaceable by said spindle between open and closed positions; and a valve housing having an inlet and an outlet for a flow medium and a housing wall defining an inner chamber for displacing said shutoff body and having a closeable lateral mounting opening with a height and a width corresponding to those of said shutoff body; a cover arranged to close said lateral mounting opening and having an edge which forms a counter abutment; a plurality of holding projections formed on said housing in the region of said lateral

mounting opening and having free ends which are bent towards said cover and form an abutment for said edge of said cover; and a tensioning pin driveable between said abutment of



said holding projections and said edge of said cover which serve as said counter abutment, so as to sealingly mount said cover on said housing.

4,607,822

SHUTOFF VALVE WITH A CONICAL VALVE SEAT

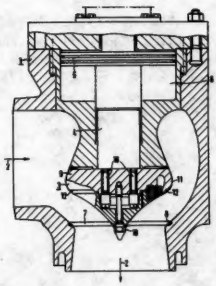
Hans-Peter Schabert, Erlangen; Max Heller, Uttenreuth; Erwin Laurer, Möhrendorf, and Hans Leinweber, Schwabach, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,687

Claims priority, application Fed. Rep. of Germany, May 9, 1983, 3316895

Int. Cl.[4] F16K *1/12, 1/46*

U.S. Cl. 251—334 3 Claims



1. Shutoff valve, comprising a conical valve seat, and a valve disc movable toward said valve seat in a given direction, said valve disc including a base body covering said valve seat, an annular projection projecting from said base body in said given direction, and a rim formed on the outside of said projection resting against said valve seat in a closed position of the valve, said projection having a region with a given wall thickness in vicinity of said base body, said projection having a free end and said free end of said projection being subdivided at least once in radial direction into rings having a larger cross section in the axial direction than in the radial direction, said rings being unsupported by said base body in radial direction, said rings reinforcing said free end of said projection to at least 1.5 times said given thickness in the radial direction and said rings having a deformation resistance against ovalizing being small enough to absorb substantially all radial forces acting on said valve seat.

4,607,823

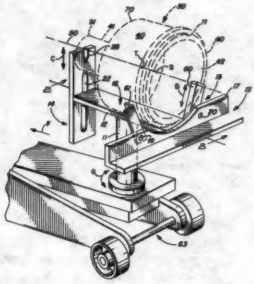
APPARATUS FOR REMOVING TRUCK BRAKE DRUM

Roy E. Thomas, 3523 W. Las Palmaritas, Phoenix, Ariz. 85021

Filed Feb. 27, 1984, Ser. No. 584,154

Int. Cl.[4] B66F *3/00*

U.S. Cl. 254—134 2 Claims



1. In combination with a brake drum carried on the spindle of a wheel axle assembly of a vehicle, the brake drum being secured to the spindle with fastening means and normally carrying a wheel rim, said rim being removed from said brake drum, said brake drum including

a generally cylindrical hollow member having

an outer surface,

an imaginary centerline passing therethrough and generally parallel to the ground,

a geometric centerpoint generally lying on said imaginary centerline, and

an acentric center of gravity located at an imaginary point spaced apart from the geometric centerpoint of said cylindrical body member,

a cylindrical aperture formed in said body member and having a centerline generally corresponding to said imaginary centerline of said cylindrical body member, said aperture being shaped and dimensioned to permit at least a portion of said spindle to pass therethrough,

a hub connected to said body member, and

at least one nut and bolt for attaching said wheel rim to said hub, said bolt being secured in and outwardly extending from said hub,

cradle apparatus positioned beneath and contacting said brake drum, said cradle apparatus including

(a) a stand having a plurality of ground engaging wheels,

(b) a base mounted on said stand for vertical displacement thereon,

(c) a first support member attached to said base and including a pair of spaced apart upstanding arms,

(d) a second upstanding support member attached to said base and adapted to receive and support said hub bolt

said first and second support members being shaped and dimensioned such that said brake drum is supported at only three points by said cradle apparatus,

(e) said hub bolt is supported by said second member, and

(f) said outer surface of said cylindrical body member only contacts and is supported by said cradle apparatus by bearing against each of said arms of said first support member,

and said body member and brake drum are maintained in position above and spaced apart from said base

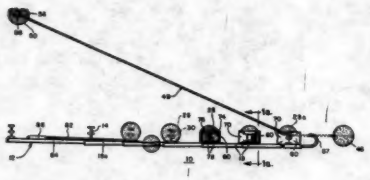
said cradle apparatus permitting said brake drum to be moved free of said spindle without tilting said brake drum by removing said fastening means securing said brake drum to said spindle and displacing said cradle apparatus stand in a generally horizontal direction of travel away from said vehicle to remove said brake drum from said spindle.

4,607,824

GUARDRAIL END TERMINAL

William G. Krage, and Owen S. Denman, both of Sacramento, Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Jan. 11, 1983, Ser. No. 457,126
Int. Cl.[4] A01K 3/00; E01F 15/00
U.S. Cl. 256—13.1 26 Claims



11. A highway barrier for preventing a vehicle which leaves a roadway and impacts the barrier head-on from impacting a hard point protected by the barrier, said barrier comprising:

an axially elongated collapsible structure configured to collapse in response to axial impact forces of an impacting vehicle; and

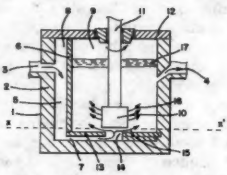
redirecting means, included in the structure, for urging at least a forward portion of the structure in a selected lateral direction, away from the roadway, upon the application of said axial impact forces from the vehicle, in order to redirect the vehicle in said selected lateral direction, away from the hard point and away from the roadway.

4,607,825

LADLE FOR THE CHLORINATION OF ALUMINIUM ALLOYS, FOR REMOVING MAGNESIUM

Emile Briolle, Saint-Egreve; Jean-Marie Hicter, Voiron, and Adolfo Mateos, Grenoble, all of France, assignors to Aluminum Pechiney, France

Filed Jul. 8, 1985, Ser. No. 752,892
Claims priority, application France, Jul. 27, 1984, 84 12270
Int. Cl.[4] C22B 21/06; F27D 7/02
U.S. Cl. 266—215 7 Claims



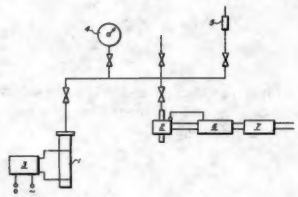
1. A ladle for the chlorination of molten aluminum alloys to remove magnesium, comprising a feed compartment having an intake spout, a treatment compartment having an outlet spout, a vertical partition separating said feed compartment from said treatment compartment, said vertical partition positioned at a distance above the bottom of the ladle to form a space for the flow of molten metal, a horizontal wall having an opening therethrough and extending at the level of the bottom of said vertical partition to close said treatment compartment at its base, and a rotor disposed within said treatment compartment for radial dispersion of chlorinated gas, the axis of said rotor coinciding with the axis of said opening, whereby molten aluminum passing through the opening flows in the same direction as the gas dispersed by the rotor.

4,607,826

APPARATUS FOR PREPARING IMPROVED POROUS METAL-HYDRIDE COMPACTS

Moshe Ron, Haifa, Israel, assignor to Technion Research and Development Foundation Ltd, Haifa, Israel

Division of Ser. No. 518,341, Jul. 29, 1983, Pat. No. 4,507,263.
This application Nov. 2, 1984, Ser. No. 667,759
Int. Cl.[4] B22F 3/00
U.S. Cl. 266—251 4 Claims



1. A sintering apparatus for preparing improved porous metal hydride compacts consisting of a sintered metal-embedded porous metal hydride, the apparatus comprising:

(a) means for preparing an intimate mixture, in powder form, of a finely divided hydridable metal alloy hydride and a finely divided metal;

(b) means for hydriding said powder by charging it with hydrogen, and

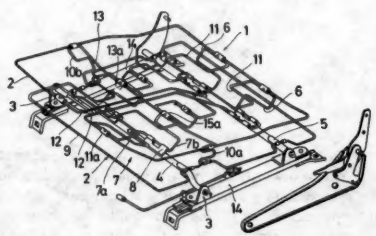
(c) means for sintering the hydrided metal-embedded metal hydride comprising a furnace, means for supplying hydrogen to said furnace at a pressure above equilibrium pressure appropriate to the prevailing temperature, and means for simultaneously applying mechanical stress.

4,607,827

SEAT FOR VEHICLES

Kenichi Kazaoka, Nagoya, and Hiroshi Okazaki, Cheryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Aug. 2, 1984, Ser. No. 637,068
Claims priority, application Japan, Aug. 3, 1983, 58-142034
Int. Cl.[4] F16F 3/02; A47C 7/28
U.S. Cl. 267—107 9 Claims



1. In a seat for mounting on forward and rearward pairs of brackets in a vehicle, the seat having a cushion for supporting a seated passenger, the improvement comprising:

spring frame means having an arrangement of seat spring means for supporting said seat cushion,

a pair of forward and rearward connecting members for interconnecting pairs of said forward and rearward brackets, said connecting members being spaced apart on a lower side of said seat,

said seat spring means including a pair of cushion springs extending along opposite sides of the upper portion of said

spring frame means and connecting the front and rear portions of said spring frame means,

said seat spring means also including a pair of forward springs for connecting the front portion of said spring frame means and a portion of each of said cushion springs rearwardly therefrom to said forward connecting member, said forward springs being pivotable on said forward connecting member,

said seat spring means also including a pair of rearward springs for connecting the rear portion of said spring frame and said rearward connecting member, and

said pair of forward springs substantially defining a forward arrangement of seat springs and a rearward arrangement of seat springs, wherein the seated passenger is substantially supported along said rearward arrangement of said seat springs.

4,607,828

HYDRAULIC ANTIVIBRATION SUPPORT

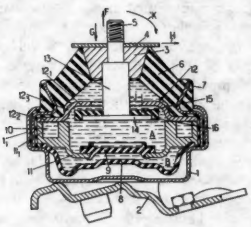
Francois Bodin; Pierre Jouadé , and Daniel Le Guillant, all of Chateaudun, France, assignors to Hutchinson, Paris, France

Filed May 6, 1985, Ser. No. 731,010

Claims priority, application France, May 4, 1984, 84 06986

Int. Cl.[4] F16F *9/10*

U.S. Cl. 267—140.1 **6 Claims**



1. Antivibration device designed to be inserted for purposes of support and damping between two rigid elements, constituted by a fluid-tight box, interposed between the two rigid elements, said box comprising two rigid parts which can be made fast respectively with the two rigid elements, a first elastic wall connecting in fluid-tight manner one of the two rigid parts, to an annular armature, forming a portion of the other part, and ensuring the role of support between the two parts, a thin flexible wall borne in fluid-tight manner by the annular armature, a deformable partition also borne in fluid-tight manner by the annular armature, between the two said walls, and dividing the inside of the box into two chambers, namely an operating chamber comprised between the deformable partition and the first elastic wall and a compensating chamber comprised between the deformable partition and said thin flexible wall, said two chambers communicating with one another through a restricted passage, means for limiting to a small amplitude, that is to say less than 1 mm, the deformations of the partition in the axial direction perpendicular to its middle plane, and a liquid mass filling the two chambers, as well as the restricted passage, said device comprising a rigid ring borne by the annular armature, between the deformable partition and the first elastic wall, of which ring the inner edge dips into the operating chamber, and a foot extending from the first rigid part inwards of the operating chamber, said foot traversing with clearance, through a passage in the rigid ring and being terminated beyond said ring by an overlapping sole whose perpendicular cross-section relative to the foot is greater than the passage cross-section of the ring, thereby limiting deformation of the first elastic wall.

4,607,829

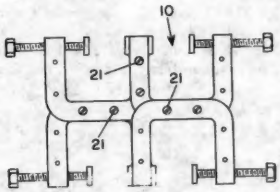
CLAMPING APPARATUS

Charles R. Suska, R.R. 1, Box 14, Roxbury, Conn. 06783

Filed Sep. 24, 1984, Ser. No. 653,922

Int. Cl.[4] B25B *1/20*

U.S. Cl. 269—88 **5 Claims**



1. Clamping apparatus comprising at least two C-clamps, each of said C-clamps being formed by a frame of three sections and having at least one adjustable clamping surface, at least four holes formed in the frame of one of the C-clamps, two of the holes being located in at least two of the three sections of the frame, at least four holes formed in the frame of the second C-clamp to cooperate with the holes in the first C-clamp, the holes in the one C-clamp and the second C-clamp being spaced so that two holes in the one C-clamp register with two holes in the second C-clamp when the one and second C-clamp are juxtaposed in any one of many desired relationships, and two fasteners adapted to be inserted through the registered holes in the two C-clamps when the C-clamps are juxtaposed to hold the two C-clamps in a desired relationship.

4,607,830

LENGTHWISE FOLDING ARRANGEMENT WITH VERTICALLY ADJUSTABLE CONICAL TIP FOLDING MANDREL

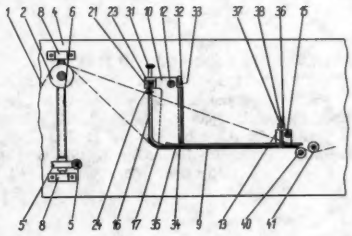
Roland Schumann, Leipzig, German Democratic Rep., assignor to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jan. 22, 1985, Ser. No. 693,802

Claims priority, application German Democratic Rep., Jan. 20, 1984, 259504

Int. Cl.[4] B41L *43/04*

U.S. Cl. 270—41 **9 Claims**



1. A lengthwise folding arrangement for webs, comprising a rotatable vertically adjustable drawing-in roller; a horizontal guiding plate forming a folding edge; a rotatable withdrawing roller; a conically extending folding mandrel arranged adjustably under a plane of a web edge extending between said vertically adjustable drawing-in roller and said withdrawing roller, said folding mandrel having a conical tip which forms a harmonious transition to said folding edge of said guiding plate; and a guiding rod arranged over said guiding plate diagonally from said folding mandrel to a rear side of a line of intersection of the web edge and said withdrawing roller;

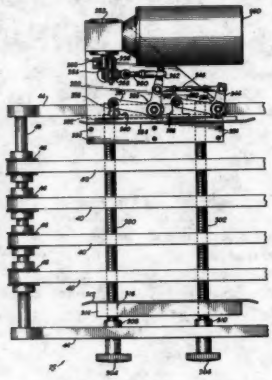
means for vertically adjusting said drawing-in roller; and means for vertically adjusting said conical tip of said folding mandrel.

4,607,831

OVERLAPPING SIGNATURE STREAM WITH ADJUSTABLE SIDE PLATE JOGGER

William B. Raybuck, Cocoa, Fla., assignor to Trimmer Machine Co., Inc., Dorset, Vt.

Division of Ser. No. 543,362, Oct. 19, 1983, Pat. No. 4,511,131.
This application Mar. 1, 1985, Ser. No. 706,973
Int. Cl.[4] B65H *39/02, 9/00*
U.S. Cl. 270—58 **7 Claims**



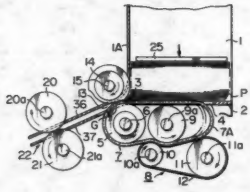
1. Jogging apparatus for aligning signatures while flowing in a moving stream in overlapping relationship, said apparatus comprising a first side plate adapted to be fixedly positioned relative to one edge of said stream of overlapping signatures for guiding the same, a second side plate positioned adjacent an opposite edge of said stream of overlapping signatures, means for bodily moving said second side plate back and forth in a direction perpendicular to said stream of signatures so that said stream is periodically struck by said second side plate and moved laterally against said first side plate, and adjustment means for selectively positioning said second side plate to be in or out of parallel with respect to said first side plate and said other edge of said moving stream of signatures.

4,607,832

ENDLESS BELT SEPARATOR HAVING AN UNSUPPORTED SEPARATING SURFACE

Masahiro Abe, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

Filed Mar. 12, 1985, Ser. No. 710,811
Claims priority, application Japan, Jan. 31, 1985, 50-12418[U]
Int. Cl.[4] B65H *3/04*
U.S. Cl. 271—10 **6 Claims**



1. A delivery device for pulling sheets of paper one at a time by the frictional contact with the foremost sheet of a stack of sheets of paper stored in registered relationship with each other and delivering the pulled out sheet to a successive device, comprising:

(a) an endless belt in contact with the surface of the foremost sheet of a stack of sheets of paper stored in registered relationship with each other;

(b) a rotary member which is disposed adjacent to the leading edge of the foremost sheet of said stack of sheets of paper and around which the front end portion of said endless belt extends;

(c) gate forming means disposed in opposed relationship with said rotary member to define a gate gap for permitting the passage of one sheet of paper between said gate forming means and the outer surface of said endless belt extending around said rotary member;

(d) means for maintaining said endless belt in a predetermined posture which forces the rear end portion of said endless belt extending around said rotary member toward the surface of the foremost sheet of paper in such a way that said rear end portion of said endless belt can be freely deformed and is brought into elastic contact with the surface of said foremost sheet of paper;

(e) driving means for driving said endless belt in the direction in which a sheet of paper is delivered; and

(f) transport means disposed downstream of said gate gap for clamping and transporting the sheet of paper delivered by said endless belt;

wherein said portion of said endless belt that can be freely deformed is brought into surface contact with the surface of said foremost sheet of paper;

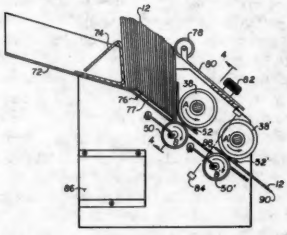
said transport means being driven at a velocity faster than the velocity of said endless belt so that when a sheet of paper is clamped and transported, the portion of the endless belt in the vicinity of the rotary member is driven at a faster velocity through the tail end of a sheet of paper, thereby causing the portion of said endless belt extending around said rotary member to be slacked; the slacked portion of said endless belt being displaced by said driving means and being then eliminated when the driving force imparted to said endless belt from the tail end of said sheet of paper being delivered is released; the portion of said endless belt in contact with said sheet of paper being maintained stationary when said slacked portion is being eliminated; the delivery of a sheet of paper being interrupted when said portion of said endless belt is maintained stationary, whereby the sheets of paper are intermittently delivered.

4,607,833

DEMAND DOCUMENT FEEDER

Eduard Svyatsky, Chicago; K. George Rabindran, Morton Grove, and Thomas J. Faber, Skokie, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 14, 1984, Ser. No. 650,926
Int. Cl.[4] B65H *5/06, 7/14*
U.S. Cl. 271—10 **24 Claims**



18. An envelope processing device comprising:

an inclined tray for holding a stack of envelopes, the inclined tray for holding a stack of envelopes, the inclined tray supporting one edge opposite the supporting envelope having a trailing edge opposite the supporting edge;

first friction feed means having a pair of rollers defining a nip and serving as means for separating the leading envelope of the stack from the rest of the stack and for feeding the supported edge of the envelope into its nip;

second friction feed means having a pair of rollers defining a nip and serving as means for separating the leading envelope of any pair of confronting envelopes fed by the first friction feed means from the other of the pair and for feeding the supported edge of the envelope into its nip;

means for mounting the second friction feeder means downstream from the first friction feeder means;

reversible drive means operatively connected to the first and second friction feed means for supplying rotational power in a forward envelope feed direction and a reverse encelope stopping direction;

sensing means for sensing the trailing edge of an envelope as it moves from the first friction feed means to the second friction feed means and for generating a stop control signal;

motor control means operated responsive to receiving the stop control signal for reversing and then stopping the reversible drive means when the sensing means detects the trailing edge of the envelope;

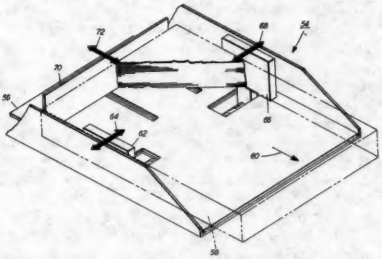
means for starting the reversible drive means in a forward direction when an operator has inputted information read from the envelope.

4,607,834

ADJUSTABLE SHEET GUIDE

Richard M. Dastin, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1985, Ser. No. 740,675
Int. Cl.[4] B65H *1/04, 31/20*
U.S. Cl. 271—171 **5 Claims**



1. A tray for holding a stack of sheet material and being adjustable to accommodate stacks of sheet material of different widths and lengths, including:

a base plate for supporting the stack of sheet material thereon;

means, mounted movably on said base plate, for defining at least one side registration surface substantially normal to said base plate;

means, mounted movably on said base plate, for defining a rear registration surface substantially normal to said base plate with the plane defined by the rear registration surface being substantially normal to the plane defined by the side registration surface;

a drive motor;

a cam connected to said drive motor to rotate therewith, said cam having a first groove on one surface thereof and a second groove of a different profile than the first groove on the other surface thereof opposed therefrom;

a first cam follower mounted movably in the first groove of said cam and connected to said side registration means so that rotation of said cam by said drive motor moves said first cam follower to adjust the position of said side registration means to position the side registration surface in engagement with at least one side edge of the stack of sheet material on said base plate; and

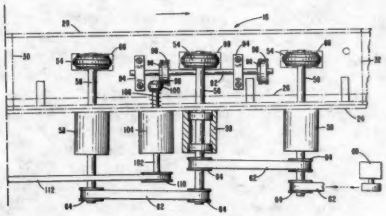
a second cam follower mounted movably in the second groove of said cam follower and connected to said rear registration means so that rotation of said cam by said drive motor moves said second cam follower to adjust the position of said rear registration means to position the rear registration surface in engagement with the rear edge of the stack of sheet material.

4,607,835

MULTIPLE DRIVE SHEET MOVING APPARATUS

Owen H. Wilson, Breslau, and Tadeusz Pecak, Kitchener, both of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 21, 1985, Ser. No. 768,083
Int. Cl.[4] B65H *7/02*
U.S. Cl. 271—227 **10 Claims**



1. A sheet moving apparatus comprising:

track means having first and second spaced side walls and a base extending therebetween;

a first plurality of drive rollers adjacent to one of the side walls for driving a sheet along the track means;

a second plurality of drive rollers positioned at an angle with respect to said first plurality of drive rollers and adjacent to said one of the side walls for driving a sheet towards said base;

a plurality of sensors to determine the position of a sheet within said track means;

a first plurality of back-up rollers, each positioned in alignment with one of said first plurality of drive rollers, and each positioned adjacent to the other of said side walls for cooperating with its corresponding drive roller to drive a sheet along the track means;

a second plurality of back-up rollers, each positioned in alignment with one of said second plurality of drive rollers, and each positioned adjacent to the other of said side walls for cooperating with its corresponding drive roller to drive a sheet toward said base;

first means for supporting said first plurality of back-up rollers for unitary movement into and out of operative engagement with said first plurality of drive roliers;

second means for supporting said second plurality of back-up rollers for unitary movement into and out of operative engagement with said second plurality of drive rollers;

actuating means responsive to said sensors for operating both of said first and second means to cause movement of one of said first and second plurality of back-up rollers into engagement with its corresponding plurality of drive rollers, and simultaneous movement of the other of said first and second plurality of back-up rollers out of engagement with its corresponding plurality of drive rollers.

4,607,836

COPYING MACHINE

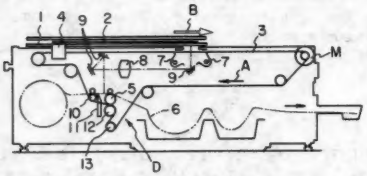
Eiji Miyasaka, Hikoneshi, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyotoshi, Japan

Filed Sep. 13, 1985, Ser. No. 775,801

Claims priority, application Japan, Nov. 1, 1984, 59-167347[U]

Int. Cl.⁴ B65H *5/06*

U.S. Cl. 271—272 **2 Claims**



1. A copying machine of reproducing the images in the original on a sheet, the copying machine comprising:

a motor for driving an endless belt running on a plurality of pulleys;

an original carrier secured to the endless belt so that the original carrier reciprocally moves in a fixed range in accordance with the movement of the endless belt; and

a sheet feeding device having a pair of feed rollers adapted to feed the sheet therebetween frictionally, and a driving roller kept in contact with one of the feed rollers so that friction drive is imparted thereto, the driving roller having an input pulley on which the endless belt runs, thereby ensuring that the amount of movement of the original carrier is transmitted to the feed rollers through the driving roller; and the driving roller and the input pulley being made to have the same diameter with a material having the same coefficient of expansion.

4,607,837

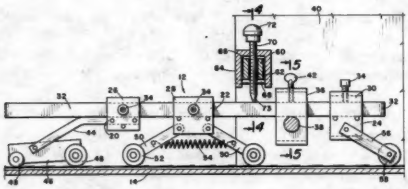
TENSION APPARATUS FOR FEEDER MACHINE

Bobby L. Pierce, Bixby, Okla., assignor to Sandco, Inc., Tulsa, Okla.

Filed Apr. 3, 1985, Ser. No. 719,887

Int. Cl.⁴ B65H *5/36*

U.S. Cl. 271—273 **3 Claims**



1. An improved pressure adjustment device for an intermediate conveyor system of a sheet feed machine, said conveyor system comprising a plurality of spaced roller assemblies slidably mounted on a beam, said beam being disposed parallel to and above a conveyor belt, said conveyor belt being mounted on a horizontally disposed table which comprises a portion of a delivery station of said sheet feed machine, a mounting bracket received on said beam and being pivotally mounted on a pivot rod, said pivot rod extending between the interior side walls of said sheet feed machine and being secured thereto; said adjustment device comprising a horizontally disposed tension bar extending between said interior side walls in parallel relation to said pivot rod, said tension bar being located forward of and closely adjacent said pivot rod, a centrally disposed elongated slot in said tension bar, an attachment means slidably mounted on said tension bar, and an adjustment means received in said attachment means whereby said adjustment means exerts a downward pressure on said beam about said pivot rod.

4,607,838

SHEET SORTER

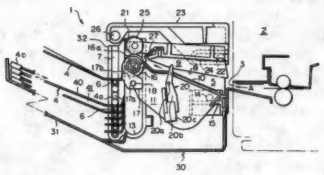
Yoshihiro Matsuyama, and Takuma Ishikawa, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 27, 1985, Ser. No. 749,418

Claims priority, application Japan, Jul. 6, 1984, 59-102912[U]

Int. Cl.⁴ B65H *39/10*

U.S. Cl. 271—293 **8 Claims**



1. A sheet sorter comprising:

means for defining a sheet feed passage having an outlet for feeding sheets one by one in a predetermined direction;

a plurality of bin trays situated adjacent to said outlet and stacked in a pile with gaps between the adjacent bin trays for receiving sheets fed from said passage;

means for widening said gaps, successively, at least at an inlet side of the bin trays;

means for shifting up and down said passage defining means in synchronization with said widening means so as to align said outlet of the sheet feed passage with the widened gap;

a transverse shaft rotatably mounted on said passage defining means adjacent to said outlet of the sheet feed passage and extending perpendicular to the sheet feeding direction;

a plurality of feed rollers spaced from each other and fixedly mounted on said shaft for feeding the sheets into said widened gap; and

at least one swing member rotatably mounted on said shaft at at least one position between said feed rollers, said swing member comprising an upper portion for rotatably suspending said swing member from said shaft, a lower mass portion for maintaining a position of said swing member due to the force of gravity acting thereon, and a downstream portion, with respect to the sheet feeding direction, projecting over said feed rollers when viewed from the transverse direction.

4,607,839

SNOW SKI MACHINE

Mark M. Knudson, 2762 Blendon Woods Blvd., Columbus, Ohio 43229

Filed Mar. 4, 1983, Ser. No. 444,866

Int. Cl.⁴ A63B *69/18*

U.S. Cl. 272—97 **11 Claims**

1. A snow ski machine which serves as an exercise device and a snow ski training device comprising:

(a) a main support frame having a central axis aligned generally from front to rear of the device;

(b) at least one track-like secondary support means mounted substantially perpendicular to the main support frame/axis, the support means being tiltable from side to side about the main axis;

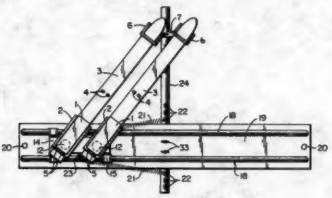
(c) a movable cart supported on the track-like support means

and movable thereon from one side of the main axis to the other;

(d) resilient means connected between the main support frame/axis and the movable cart to urge the cart to a central position over the main support frame/axis on the track-like support means;

(e) a pair of assimilated skis pivotally mounted in substantially side by side position on the said cart;

(f) a front ski guide means mounted on the main support frame/axis at a position removed from the secondary support means including guides to slidably maintain the



assimilated skis in parallel position relative to each other when the cart is moved upon the track-like support means; and

(g) surface means on each ski to receive a foot of a person using the device to support the weight of the person, the movable cart being movable from one side of the main support frame/axis to the other side of the main support frame/axis, responsively to shifts in the center of weight distribution of the person, while being progressively resisted by the resilient means at a greater distance from the main support frame/axis, in assimilation of down hill parallel snow skiing.

4,607,840

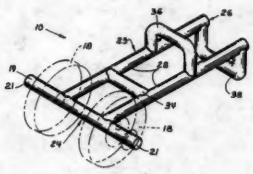
WEIGHT TRAINING DEVICE

James J. Harper, Rte. 1, Box 21-D, Newman Lake, Wash. 99025

Filed Dec. 27, 1983, Ser. No. 565,332

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—117 **19 Claims**



1. An exercise device for mounting weight training plates, comprising:

a plate mounting bar for receiving weight training plates;

an elongated open frame having a front end mounted to the plate mounting bar and extending from the plate mounting bar to a rearward end;

a handgrip on the frame spaced toward the rearward frame end from the plate mounting bar,

a first brace member on the frame spaced toward the rearward frame end from the handgrip;

a second brace member on the frame spaced rearwardly from the first brace member;

wherein the brace members are spaced apart relative to one another, so a user's forearm can be accommodated along the frame with the hand gripping the handgrip, and the first and second brace members located adjacent opposite surfaces of the forearm such that the second brace member is situated along the forearm adjacent the elbow and the first brace member adjacent the forearm between the hangrip and second brace member and

wherein the mounting bar and frame lie along a longitudinal plane that, when the device is mounted to a user's forearm, substantially passes lengthwise through the forearm.

4,607,841

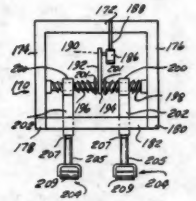
ISOMETRIC EXERCISE APPARATUS

Jeffrey A. Gala, 6904 Valley Spring Dr., Birmingham, Mich. 48010

Filed Dec. 16, 1982, Ser. No. 450,269

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—125 **11 Claims**



1. An exercise apparatus comprising:

a stand, the stand having an upright support and a base;

first and second user engagable members mounted on the upright support for a user to exert a force thereagainst;

a trolley movably mounted on the upright support of the stand for vertical movement, the user engagable means being mounted on the trolley;

drive means mounted on the stand for bi-directionally driving the trolley, the drive means including:

first bi-directional motor means;

a rotatable screw mounted within the upright support of the stand and drivenly connected to the motor means;

means for threadingly connecting the trolley to the rotatable screw; and

control means for controlling the speed, direction and duration of rotation of the screw;

scale means mounted on the base of the stand for supporting a user and measuring the force exerted by the user against the user engagable means; and

display means, connected to the scale means, for displaying the force measured by the scale means;

moving means connected to the first and second user engagable members for moving the first and second user engagable members transversely with respect to the stand, the moving means including:

a second motor means;

a pair of second screw means driven by the second motor means; and

means for threadingly connecting each of the first and second user engagable members to the pair of second screw means, respectively, such that the first and second user engagable members move transversely with respect to the stand upon rotation of the pair of second screw means.

4,607,842

EXERCISING APPARATUS FOR USE BY HOCKEY PLAYERS TO PRACTICE THEIR SLAP AND WRIST-SHOTS

Real Daoust, 107 Chemin Beauce, Ste-Martine, Quebec, Canada

Filed Aug. 6, 1984, Ser. No. 638,241

Int. Cl.[4] A63B *69/00*

U.S. Cl. 273—1 B **10 Claims**

1. An exercising apparatus for use by hockey players to practice their shots, comprising:

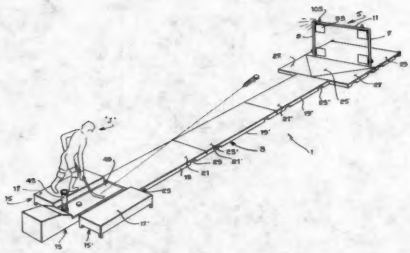
a lane structure made of a plurality of modular elements

provided with fixation means for connecting them end to end;

a goal structure mounted at one end of the lane, said goal structure comprising (a) two vertical posts and a horizontal bar of regular dimensions (b) four vertical targets respectively mounted in the internal corners of the goal structure, and (c) four visual means associated with said four targets, respectively;

a puck dispensing device located at the other end of the lane for dispensing a plurality of pucks one by one;

at least one platform positioned adjacent to the puck dispensing device for receiving a hockey player who wants to



practice his shots and allowing this hockey player to throw each dispensed puck toward the goal structure with a hockey stick, said platform having an upper surface positioned for simulating during the exercise, the height of the skates that the hockey player puts on when actually playing on a rink; and

an electronic control circuit for operating said visual means one after the other in any sequential order, even repetetively, at substantially the same speed as the one at which the pucks are distributed by the dispensing device, for visually indicating to the players which target amongst said four targets they must try to aim at.

4,607,843

AUTOMATIC BOWLING POSITION INDICATOR

Edward J. Signoretti, 22 Veronica Ct., Smithtown, N.Y. 11787

Filed May 14, 1984, Ser. No. 609,655

Int. Cl.[4] A63D *5/04*

U.S. Cl. 273—54 C **7 Claims**

1. An automatic bowling position indicator for a bowling lane comprising:

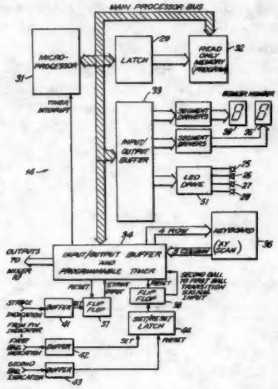
means for indicating the position of bowling pins on the lane;

means for entering bowling characteristics of at least one bowler, the bowling characteristics for each bowler including the throwing hand of the bowler and whether the bowler bowls a straight or hook ball;

processing means, responsive to said pin position indicating means and said characteristic entering means, for determining a foot position for an individual bowler and for determining a place on the lane over which a bowling ball should pass, in response to the bowling characteristics entered;

first lighting means positioned on the surface of said bowling lane for automatically indicating the foot position of the individual bowler, said first lighting means including two rows of lights disposed behind a foul line of said bowling lane; and

second lighting means positioned on the surface of said bowling lane for automatically indicating the place over which the bowling ball should pass, said second lighting



means including a plurality of lights disposed forward of said first lighting means.

4,607,844

POKER MACHINE WITH IMPROVED SECURITY AFTER POWER FAILURE

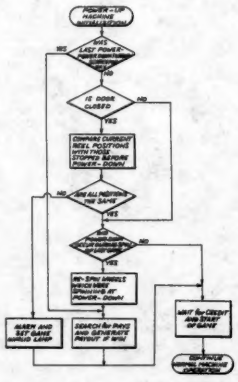
Graeme D. Fullerton, Beverly Hills, Australia, assignor to Ainsworth Nominees Pty. Ltd., Rosebery, Australia

Filed Dec. 3, 1985, Ser. No. 803,969

Claims priority, application Australia, Dec. 13, 1984, PG8554

Int. Cl.[4] A63F *5/04*

U.S. Cl. 273—143 R **8 Claims**



1. An electrically operated poker machine comprising a plurality of rotatable reels each carrying a plurality of indicia about their periphery, means for spinning the reels, individually or together, in response to electrical signals initiated by control means, means for determining current status of said reels and alarm means responsive to said control means, said control means including non-volatile memory means for storing the current status of each of said reels, said control means including means to examine the current status of said reels upon resumption of power after a power loss and to compare the current status with a status stored in the non-volatile mem-

ory prior to the power loss to determine whether any reel which was stopped prior to the power loss has subsequently moved and if such movement has occurred to cause said alarm means to signal an alarm condition.

5. A method of controlling a poker machine having a plurality of rotatable reels each carrying a plurality of indicia about their periphery, means for spinning the reels, individually or together in response to electrical signals initiated by control means, means for determining current status of said reels and alarm means responsive to said control means, and said control means including non-volatile memory means for storing the current status of each of said reels, the method including the steps of

(a) during normal operation of the machine, periodically testing the current status of the reels and updating the contents of the non-volatile memory; and

(b) during initialization after power up:

(i) testing the current status of the reels;

(ii) comparing actual status of the reels with the status stored in the non-volatile memory; and

(iii) if the comparison indicates that a reel that was stationary when the current status was last stored in the non-volatile memory, has subsequently moved, initiating an alarm signal.

4,607,845

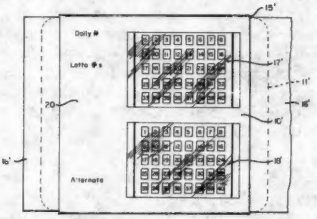
SLIDE NUMBER IDENTIFIERS

William Gallo, 619 Rose St., Apollo, Pa. 15613

Filed Oct. 22, 1984, Ser. No. 663,489

Int. Cl.[4] A63F *3/06*

U.S. Cl. 273—148 R **2 Claims**



1. A slide number identifier for elongate multi-number set lottery cards having said sets extending transversely of the card in succession comprising a single blank of plastic having a first rectangular panel, a second rectangular panel of generally equal size extending from one side of said first panel and a third smaller panel extending from an opposite side of said first panel, said first panel having two spaced-apart translucent windows therein each window outlined by a colored coating and each having a set of lottery numbers printed thereon in the alignment of a single transverse set of numbers as used on a lottery card with which the slide number identifier is to be used, said first panel having a wide coated section adjacent said windows to provide an area on which winning lottery numbers may be removably written, said first and second panels being folded to side-by-side relation and said third panel being folded so as to overlap the end of said second panel so as to form a closed sleeve through which the lottery card may be passed longitudinally and two sets on the card may be aligned respectively with the number sets on the two spaced-apart windows whereby two separate and complete sets of numbers on the card are each independently outlined by the colored coating of the first panel.

4,607,846

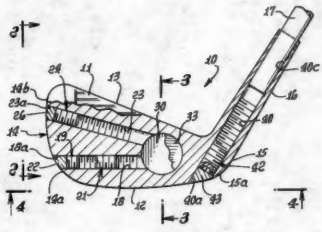
GOLF CLUB HEADS WITH ADJUSTABLE WEIGHTING

Sonnie J. Perkins, 1214 169th Ave., NE., Bellevue, Wash. 98008

Filed May 3, 1986, Ser. No. 730,194

Int. Cl.[4] A63B *53/04, 53/08*

U.S. Cl. 273—171 **20 Claims**



1. A golf club head having a front face adapted to strike a golf ball, a bottom surface, a top surface, an aft surface, a toe, a heel and a hosel, comprising

(a) a first elongated opening extending directionally between the lower extents of the toe and heel, and located closer to said bottom surface than to said top surface, said first opening also angled forwardly and aftwardly, and a first weight adjustably located endwise in said opening,

(b) and a second elongated opening extending directionally between the toe and heel, and located closer to said top surface than to said bottom surface, said second opening inclined upwardly relative to the first opening and toward the upper extent of the toe, and a second weight adjustably located endwise in said opening.

4,607,847

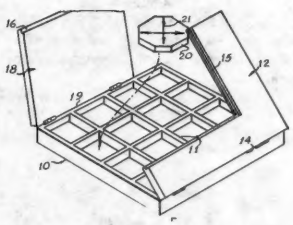
GAME AND APPARATUS THEREFOR

W. Reginald Chung, 1402 Murray Ave., Tifton, Ga. 31794

Filed Dec. 20, 1984, Ser. No. 683,855

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—264 **5 Claims**

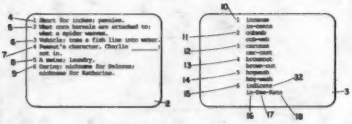


1. A game apparatus for playing a game such as tick-tack-toe, said game apparatus including a gameboard, a grid on said gameboard, said grid dividing said gameboard into a plurality of locations arranged in columns and rows, said grid being suitable for playing a game using fewer than all said locations, said game apparatus including a plurality of game pieces receivable within said grid, and cover means for selectively covering said grid, said cover means including a first cover means hinged to one side of said gameboard for selectively covering one column and one row of said grid, and a second cover means hinged to another side of said game board for selectively covering the remainder of said grid.

4,607,848
WORD GAME INVOLVING THE USE OF MOSAIC SCORE AND STRATEGY BOARDS

Hugh P. Maguire, and Helen A. Maguire, both of 2092 Persimmon Ct., Cincinnati, Ohio 45231

Filed Sep. 17, 1984, Ser. No. 651,586
Int. Cl.[4] A63F 3/00
U.S. Cl. 273—269 2 Claims



1. A word game comprising:

a plurality of word cards, each card having on one side a plurality of clue sets each identified by a different unique number designation, each of said clue sets comprising at least one definitional interrogative clue, said card having on its opposite side a component answer for each of said clues and an ultimate word answer comprising the combination of said component answers combined in the same order as the associated clues to form the substantial phonetic equivalent of said ultimate answer word, each of said answers being identified by the same number designation as the associated clue set;

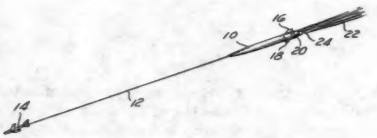
at least one die having a plurality of faces, each of said faces bearing one of said unique number designations; and

scoring means for keeping score of the number of successful formations of ultimate answer words comprising at least one window board divided into a plurality of regions forming a mosaic pattern, each of said regions being divided into a number of differently colored areas equal in number to one of said unique number designations, and a plurality of window board cover pieces, each of said cover pieces being dimensioned to cover an associated one of said regions and containing a number of areas equal in color, number, size and shape to the colored areas on the associated region of said window board.

4,607,849
JET EXHAUST SIMULATOR

David H. Smith, Fountain Valley, and Roger D. Brum, Irvine, both of Calif., assignors to Southwest Aerospace Corporation, Santa Ana, Calif.

Filed Mar. 7, 1985, Ser. No. 709,092
Int. Cl.[4] F41J 9/10
U.S. Cl. 273—348.1 13 Claims



1. A jet exhaust simulator for producing an exhaust plume from a aerial target using fuel supplied from an internal fuel storge tank or host aircraft tank source, said exhaust simulator comprising:

an air collection scoop for collecting air

a pilot chamber head and a pilot flame chamber having a generally cylindrical shape, said pilot chamber head having the shape of a circular disk with an axis and having a central bore along said axis and with a funneled opening into said pilot flame chamber, said pilot chamber head also having an annular air chamber around said central bore and connected to receive air collected by said air collection scoop, said pilot chamber head further having a plurality of metering orifices between said annular air chamber and said funneled opening for directing air from said annular air chamber into said pilot flame chamber, said pilot chamber head further having a plurality of tangential air injection ports between said annular air chamber and said central bore for directing a swirling flow of air from said annular air chamber, through said central bore and into said pilot flame chamber;

a pilot nozzle connected to receive fuel from said fuel source, and mounted inside said central bore along the axis thereof to squirt fuel into said pilot flame chamber and inside the flow of air from said metering orifices and said tangential air injection ports, and to produce a stable pilot flame inside said pilot flame chamber;

an igniter mounted in said pilot chamber for igniting the fuel flowing from said pilot nozzle to light said pilot flame;

a burn tube having an axis aligned with said axis of said pilot chamber head, connected to receive gases flowing from said pilot flame chamber, said burn tube having a flame holder ring mounted inside thereof for defining a secondary flame chamber between said pilot flame chamber and said flame holder ring and a mixing area between said orifice plate and an exit end of said burn tube, said burn tube having a plurality of secondary air injection ports connected to transfer air from said air collection scoop into said secondary flame chamber near said entrncee end of said burn tube;

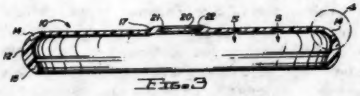
a plurality of secondary nozzles connected to receive fuel from said fuel source, and mounted to squirt fuel to mix with the flow of air from said secondary air injection ports, and to produce a secondary flame inside said secondary flame chamber and ignited by said pilot flame; and

a plurality of tertiary nozzles connected to receive fuel from said fuel source, and mounted to squirt fuel inside said mixing chamber intermediate the length thereof and to combine with gases from said secondary flame area and become ignited thereby to produce said exhaust plume at said exit end of said burn tube.

4,607,850
LIGHTED SPORT ARTICLE FOR HAND TOSSING

Henry M. O'Riley, 88 N. Country Club Dr., Phoenix, Ariz. 85014

Filed Sep. 25, 1985, Ser. No. 779,472
Int. Cl.[4] A63B 65/10
U.S. Cl. 273—424 4 Claims



1. A sport article for tossing about by hand, which comprises:

(a) a disc having a central region and a perimetric region therearound;

(b) flange means depending from said perimetric region, said flange means including inner-facing and outer-facing surfaces;

(c) receiving means located in said central region for remov-

ably receiving a power source therein, said receiving means having a base and an adjacent wall member;

(d) first and second contact means located in said receiving means, said first contact means being located at the base thereof and said second contact means being located in the adjacent wall member;

(e) retention means located on the outer surface of the central region of said disc for securing the power source in said receiving means, said retention means including a flexible flange formed as an integral portion of the central region of said disc, said flange overlying a portion of the receiving means;

(f) light emitting means positioned within said flange means proximate to the outer-facing surface thereof; and

(g) connection means contained within said disc and flange means for electrically connecting said light emitting means to said receiving means; the placement of a power source in said receiving means causing light to be emitted from the outer surface of said flange means.

4,607,851

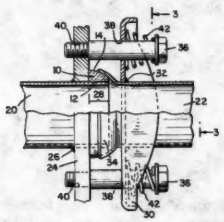
METHOD OF MAKING COMPOSITE WIRE MESH SEAL

Peter P. Usher, Union, N.J., assignor to Metex Corporation, Edison, N.J.

Filed Nov. 30, 1977, Ser. No. 856,174

Int. Cl.[4] F16J *15/12;* B32B *31/06*

U.S. Cl. 277—1 9 Claims



1. A method of producing a substantially coherent high temperature composite seal comprising the steps of constructing a preform comprising flexible refractory sheet material aligned against flexible knitted wire mesh by convoluting of strip of refractory material with one or more overlying pieces of knitted wire mesh to form a generally cylindrical preform, said wire mesh being formed of wire and having voids of given size between said wires, disposing said preform in a compression die, said die having a cavity size and shape which is substantially the same as the desired composite seal, and applying an axial load to said preform, said load being of sufficient force to collapse said preform to substantially the size and shape of said composite seal and to cause said refractory material to substantially fill the openings in said wire mesh and to become firmly interlocked with said mesh.

4,607,852

ACCORDIAN-FOLDED BOOT SHIELD FOR FLEXIBLE SWIVEL CONNECTION

Joseph C. Hoh, Naperville, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

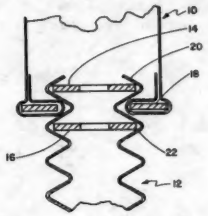
Filed Feb. 19, 1985, Ser. No. 702,540

Int. Cl.[4] F16J *15/52;* F16L *9/06*

U.S. Cl. 277—1 10 Claims

1. Apparatus for connecting a first boot section to a second boot section, said first and second boots having openings therethrough, said second boot having at least two adjacent accordian folds at the end having the opening, said second boot being positioned through the opening of said first boot such that a first of said accordian folds is within said first boot and a second of said accordian folds is outside of said first boot comprising:

first and second annular discs, said first disc being positioned within and across said first accordian fold, said second



disc being positioned within and across said second accordian fold such that said first boot is moveably and rigidly connected between said first and second accordian folds.

4,607,853

SEALING CAP FOR USE IN INTERNAL CLEANING OF CAN FILLERS

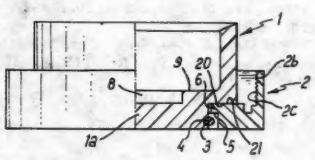
Stuart Nicol, Edinburgh, Scotland, assignor to Scottish & Newcastle Breweries PLC, Edinburgh, Scotland

Filed Sep. 18, 1984, Ser. No. 651,794

Claims priority, application United Kingdom, Sep. 20, 1983, 8325172

Int. Cl.[4] F16J *15/06*

U.S. Cl. 277—12 6 Claims



1. A sealing cap for use in the internal cleaning of a can filling apparatus and adapted to be fitted to the head of the can filling apparatus, the sealing cap comprising:

a sealing member and a threaded retaining ring, the sealing member being rotatably mounted within the threaded retaining ring which is adapted to be screwed onto a threaded outer surface of the can filling head;

the sealing member being provided with a cylindrical lower portion adapted to be received within a circular aperture formed in the retaining ring; and

the sealing member being rotatably held within the retaining ring by means of an O-ring located in a groove on said cylindrical lower portion.

4,607,854

OIL SEAL FOR LUBRICATED TRACK CHAIN JOINTS, PARTICULARLY FOR TRACK TYPE VEHICLES

Maurizio Bissi; Andrea Cocco, and Guerrino Baggio, all of Castelfranco Veneto, Italy, assignors to Simmel S.p.A., Castelfranco Veneto, Italy

Continuation of Ser. No. 598,887, Apr. 10, 1984, abandoned. This application Aug. 5, 1985, Ser. No. 763,304

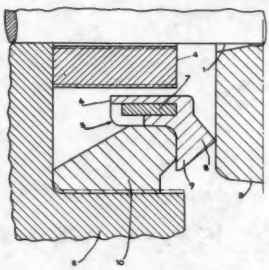
Claims priority, application Italy, Apr. 29, 1983, 21680/83[U]

Int. Cl.[4] F16J *15/32*

U.S. Cl. 277—152 1 Claim

1. An oil seal for a lubricated track chain joint, particularly for track-type vehicles, said joint including a bushing and a

link, comprising a primary ring of a flexible elastomeric material formed with an annular portion and a flanged portion which includes an axially projecting sealing lip in contact with said bushing, a secondary ring of a resilient material adapted to be in contact with said primary ring and said link, said primary and secondary rings adapted to form a seal between said link and said bushing, and said primary ring including a cylindrically shaped metal stiffening ring embedded and located entirely within and coaxial with said annular portion such that said sealing lip and said flanged portion do not contact said metal stiffening ring, whereby said primary ring has an annular portion which is stiffened by said metal stiffening ring and a flexible flanged portion and sealing lip which are not stiffened by said metal stiffening ring.



4,607,855

HAMMER DRILL CHUCK

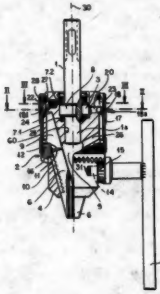
Günter H. Röhm, Heinrich-Röhm-Strasse 50, D-7927 Sontheim, Fed. Rep. of Germany

Filed Dec. 26, 1984, Ser. No. 686,243

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1984, 3400149

Int. Cl.[4] B23B *31/12*

U.S. Cl. 279—62 **4 Claims**



1. A chuck, comprising:

a chuck body rotatable about an axis and provided with a through-passage in direction of said axis;

holding means provided in elongation of said through-passage in said body for retaining an implement, said chuck body being formed with at least one channel leading to said holding means adjacent to said through-passage; and

tightening means cooperating with said holding means for locking and loosening the implement retained within said holding means and having a plurality of discharge openings extending in the direction of said axis, said tightening means embracing said chuck body at a distance so as to define an annular space therebetween which is in communication with said discharge openings and said channel, whereby any detritus may be discharged through said at least one channel, annular space and openings to the exterior of the chuck, said tightening means including an actuating sleeve having an inner side provided with a toothed skirt defining gaps between adjacent teeth which gaps are open in the direction of said axis and form a part of said discharge openings, and a locking member engageable with said toothed skirt for preventing a relative motion between said chuck body and said actuating sleeve, and a loosening ring on said chuck body, said loosening ring being axially aligned with said actuating sleeve and having a periphery provided with indentations spaced along said periphery so that respective interstices are defined between said chuck body and said loosening ring, said interstices extending outwardly and being in alignment with said gaps and forming another part of said discharge openings.

4,607,856

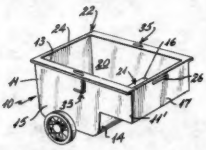
COMBINATION CART AND BOAT BOARDING STEPS

Wallace T. Saleeba, 33 Curtis St., East Providence, R.I. 02914

Filed Feb. 6, 1986, Ser. No. 826,631

Int. Cl.[4] B62B *1/20*

U.S. Cl. 280—47.18 **14 Claims**



1. The combination of a cart and steps for use with boats tied along docks comprising a housing having side wall portions, a lowermost wall portion having inner and outer surfaces and at least one intermediate lower wall portion having inner and outer surfaces, said intermediate lower wall portion being spaced in vertical relationship with respect to said lowermost wall portion and extending relatively outwardly therefrom and in general parallel relationship thereto, said housing having uppermost edge portions defining an opening therebetween, at least one ground engaging wheel carried by said housing for normally supporting said housing in movable contact with a supporting surface, said housing being invertible so that said upper edge portions thereof support said housing in substantially even contact with a supporting surface, said outer surface of said intermediate lower wall portion defining a first step which is vertically spaced below and adjacent to a second step formed by said outer surface of said lowermost wall portion when said housing is inverted so that said first and second steps may be utilized by an individual to ascend and descend from one supporting surface to another.

4,607,857

HOT FAT TRANSPORTING CONTAINER

Richard LeSage, Redwood Falls; Eugene N. Reshanov, Golden Valley, and Richard A. Schlemmer, Redwood Falls, all of Minn., assignors to International Safety Containers of Minnesota, Inc., Redwood Falls, Minn.

Filed Sep. 3, 1985, Ser. No. 771,707

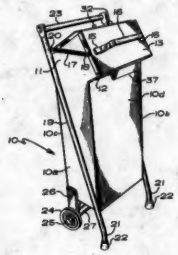
Int. Cl.[4] B62B *1/04*

U.S. Cl. 280—47.26 **18 Claims**

1. A hot fat transport vehicle, comprising:

(a) an elongated normally upright closed container having a front side with a support surface associated therewith, a back side, and opposite lateral sides;

(b) a transverse axle mounted upon said container adjacent the lower portions of said front side;
(c) a pair of wheels rotatably mounted on said axle, one each adjacent each of said opposite sides of said container;
(d) handle means carried by said axle between said wheels;
(e) said container having an inlet throat at its upper end formed as an extension of said front and lateral sides and extending upwardly and outwardly at said back side at an angle to the longitudinal axis of the container, and having an inlet opening at its outer end, said inlet opening extending transversely with respect to the longitudinal axis of said inlet throat;



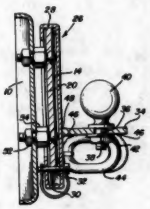
(f) a closure member carried by said container for closing said inlet opening and being movable between its closed position and its open position relative thereto;
(g) elongated foot structures extending downwardly from said container adjacent its said back side and constructed and arranged to support said container in its upright position in cooperation with said wheels; and
(h) second handle means connected to said container for facilitating movement of said container upon said wheels from one location to another wherein said vehicle may assume either a horizontal filling position with the container resting upon said support surface or an upright position with the container being supported by said wheels and said foot structures.

4,607,858

REMOVABLE HITCH

Howard W. Wagner, Grand Island, Nebr., assignor to Wood's Welding Inc., Grand Island, Nebr.

Filed Mar. 26, 1985, Ser. No. 716,443
Int. Cl.[4] B60D *1/06*
U.S. Cl. 280—491 E **7 Claims**



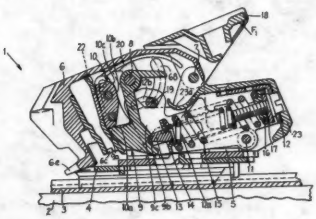
1. A removable bumper hitch including a mounting plate having first and second sides and including mounting means for mounting said plate from the outwardly facing surface of a vehicle bumper in slightly spaced relation relative thereto with said first side opposing said surface of said bumper, a hitch member support plate defining channel means for slidingly engaging at least two remote marginal portions of said mounting plate and with said support plate being slidingly engageable over said mounting plate to a position in closely juxtaposed registered position relative thereto and slightly spaced relative to and opposing said second side of said mounting plate, said plates including co-acting means releasably anchoring said plates in registered position against shifting of said support plate relative to said mounting plate, the side of said support plate remote from said mounting plate including outstand hitch means mounted therefrom, said space between the two opposing sides of said mounting and support plates being sufficient to receive a license plate therebetween, said mounting plate including means for supporting a license plate therefrom overlying said second side of said mounting plate and disposed between the latter and said support plate.

4,607,859

SAFETY SKI BINDING

Heinz Wittmann, Vienna; Friedrich Leichtfried, Traiskirchen; Emilie Szabo, Schwechat, and Tibor Szasz, Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Feb. 16, 1984, Ser. No. 580,996
Claims priority, application Austria, Feb. 16, 1983, 517/83; Nov. 11, 1983, 3989/83
Int. Cl.[4] A63C *9/08*
U.S. Cl. 280—632 **17 Claims**



1. In a heel holder of a safety ski binding having a sole holder and first support means pivotally supporting said sole holder for movement between opened and closed positions and about a transverse axle supported on a bearing block secured to a base plate, an opening spring for continually urging said sole holder into said opened position, a locking rocker arm pivotally supported on said sole holder for holding said sole holder in said closed position, said locking rocker arm having on one side thereof a locking projection which, in said closed position, grips under a control-cam member arranged on said bearing block and having, on the other side thereof, a locking notch into which is received a locking member, at least one spring for continually urging said locking element toward said locking rocker arm, said one spring being supported in a spring housing, a second support means pivotally supporting said spring housing on said bearing block for limited movement with respect to said bearing block, a release lever for facilitating a voluntary movement of said sole holder between said closed and opened positions, said release lever being movably supported on said sole holder and having a bolt which couples said release lever to said spring housing, the improvement comprising wherein a stop means is provided on at least one of said base plate and said bearing block of said heel holder, said stop means abutting against a support region on said spring housing only during a voluntary release whereat said locking member is disengaged from said locking notch on said locking rocker arm and said sole holder is in a position between said closed and opened positions thereof, wherein coupling means are provided for relatively movably coupling said spring housing and said sole holder, said support region defining a fulcrum for urging said spring housing toward said closed position thereof in response to a continuing urging of said sole holder to said openend position by said opening spring so that the foloowing phase of said voluntary release will cause a relative movement

between said sole holder and said spring housing and a return of said locking element into said locking notch.

4,607,860

FOLDING WHEELCHAIR

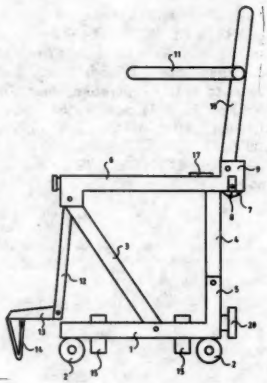
Ignaz Vogel, Kleinsteinbacher Str. 44, 7500 Karlsruhe 41-Stu, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 660,810

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1983, 3337263

Int. Cl.[4] B62B 3/02

U.S. Cl. 280—650 9 Claims



1. A folding wheelchair for disabled persons, comprising: a lower frame; a number of casters mounted on the lower frame; a seat with a backrest pivotally mounted thereon so as to permit folding thereof onto said seat, said seat being supported on said lower frame by a pair of front links and a pair of rear struts, said front links being pivotally connected to the front of said seat and being hinged to said lower frame at an intermediate location substantially along an axis extending laterally below the center of said seat, said pair of rear struts being shorter than said front links and pivotally connected to an upstanding column of said lower frame, said front links and said rear struts being pivotable forwardly to a lower position in which said seat is folded onto said lower frame and backwardly to an upward pivoted position for normal use of said seat, said pair of rear struts being upright in such normal seat use position so as to provide support for said seat, said seat carrying at its rear end a laterally extending roller adapted to roll on a support structure against which said wheelchair is backed so that said seat is movable between front and rear end positions by pivoting of said front links, said front and rear end positions being lower than any intermediate position so that said seat by its weight and the weight of any person thereon automatically moves into one of said end positions, said seat having a frame and a center portion which is pivotally supported at the front of said frame so as to be capable of being pivoted down out of said seat frame.

4,607,861

HYDRAULIC STABILIZING SYSTEM FOR VEHICLE SUSPENSION

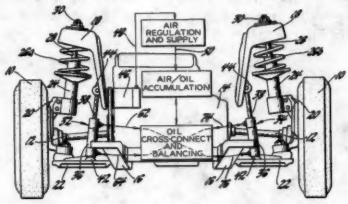
Sidney W. Eisenberg, Linden, and Gregory J. Johnson, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1984, Ser. No. 682,295

Int. Cl.[4] B60G 9/00

U.S. Cl. 280—702 2 Claims

1. In spring suspension apparatus for a vehicle having an unsprung mass with a plurality of road wheels and a sprung mass, a hydraulic stabilizing system including a pair of like piston and cylinder units each applied between said vehicle masses adjacent a respective road wheel and comprising a piston rod attached to the same selected one of such masses and at its inner distal end carrying a piston head relatively moveable within its cylinder and partitioning such unit into opposite chambers of different cross-sectional area, and means cross-



connecting each chamber of one said unit in a fluid pressure circuit with said pressure supply means and with the opposite of the corresponding chamber of the other said unit and comprising expansible chamber means operative to compensate for said differential area of said chambers and prevent force in said units between said vehicle masses except in the presence of forces therebetween tending to move said pistons in opposite directions within their cylinders.

4,607,862

MOBILE MACHINE COMPRISING A STABILIZING DEVICE

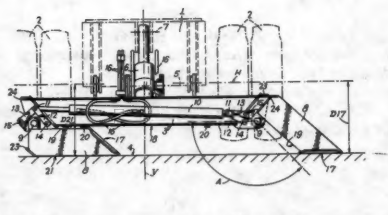
Georges E. Deram, Saint-Pathus, and Maurice A. Panczyk, Le Plessis Belleville, both of France, assignors to Poclain, Le Plessis Belleville, France

Filed Jan. 29, 1985, Ser. No. 696,333

Claims priority, application France, Feb. 13, 1984, 84 02163

Int. Cl.[4] B60S 9/12

U.S. Cl. 280—765.1 11 Claims



1. In a mobile machine comprising a frame, a beam mounted on the frame, and a stabilizing device, the stabilizing device comprising at least two arms, means pivotally mounting each arm on the beam for pivotal movement about a pin and each arm being coupled to a first member for adjusting its pivoting with respect to said beam and supporting a sole plate for abutment on the ground, the pivot pins of the two arms with respect to the beam being parallel, means mounting the beam to pivot with respect to the frame about a pin which is at right angles to the pivot pins of the two arms, a second member for adjusting the pivoting of the beam with respect to the frame coupled between the beam and the frame, each arm being movable between two extreme positions of pivoting with respect to the beam, which are separated by an arc of pivoting substantially greater than 90°, wherein when the beam is placed in the configuration of use of the stabilizing device, in a first position, said arm is folded beneath the beam, substantially parallel to said beam and, in a second position, said arm extends obliquely with respect to the beam, its sole plate being spaced

apart from the beam and substantially horizontal, and when the beam is placed in the configuration of use of the stabilizing device, on the one hand, in its first position, the arm has a first of its faces, opposite the beam, disposed substantially horizontal and capable of constituting a bearing surface for the arm on the ground distinct from the sole plate of said arm, and on the other hand, the distances separating said first face, in the first position of the arm, and said sole plate, in the second position of the arm with respect to a horizontal plane are substantially equal.

4,607,863

PASSIVE SEAT BELT SYSTEM

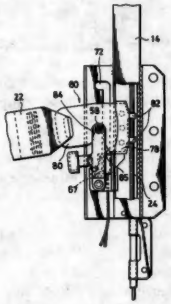
Yoshihiro Yokote, Yokohama, Japan, assignor to NSK-Warner K.K., Japan

Filed Mar. 8, 1985, Ser. No. 709,910

Claims priority, application Japan, Mar. 13, 1984, 59-34815[U]

Int. Cl.⁴ B60R *22/06*

U.S. Cl. 280—804 **11 Claims**



1. A passive seat belt system comprising:

a guide rail to be mounted on a vehicle body;

a movable anchor provided displaceably along the guide rail and connected with a webbing;

drive means for causing the movable anchor to travel between either one of a plurality of first positions, at which the webbing is brought into engagement with an occupant to restrain the occupant, and a second position at which the webbing is out of engagement with the occupant to release the occupant;

a base to be mounted on the vehicle body, said base being equipped with a plurality of interlocking portions which are arranged with an interval in the up-to-down direction of the vehicle body when mounted on the vehicle body; and

a support member displaceable between an engagement position, at which the support member is brought into engagement with either one of the interlocking portions of the base so as to determine the first position of the movable anchor, and a non-engagement position at which the support member is kept out of engagement with any of the interlocking portions of the movable anchor, said support member being composed of a single rod-like member which in the event of emergency, is brought into engagement with the movable anchor assuming the first position so as to transmit a load exerted on the movable anchor to the vehicle body by way of the base.

4,607,864

WEBBING SUPPORT DEVICE

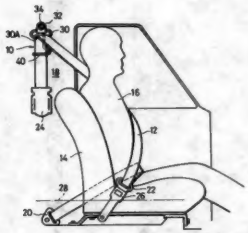
Eiji Kouketsu, Niwa, and Masato Tsumagari, Ikeda, both of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi and Daihatsu Motor Co., Osaka, both of, Japan

Filed Aug. 7, 1984, Ser. No. 638,661

Claims priority, application Japan, Aug. 8, 1983, 58-122994[U]

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 280—808 **22 Claims**



7. A webbing support device adapted for use in a seatbelt system for supporting an intermediate portion of an occupant restraining webbing positioned between a torso of the occupant and a webbing retractor retracting the webbing therein on a vehicle body, which comprises:

(a) a slip ring made of rod material and formed in an oval shape having two sides parallel to each other, one of the two sides supporting the intermediate portion of the webbing;

(b) a connecting plate secured to the other of the two sides of the slip ring and mounted on the side wall of the vehicle body through a mounting bolt rotatably thereabout;

(c) a spacer of a tubular shape penetrated by the mounting bolt and disposed between the connecting plate and the side wall of the vehicle body, whereby the connecting plate is kept in a rotatable situation; and

(d) a webbing supporting member made of rod material and suspended through one end portion thereof from the spacer, the other end portion of which is formed with a supporting portion capable of supporting a portion of the webbing positioned between the slip ring and the torso of the webbing, whereby an anchor point of the webbing for the torso of the occupant can be changed corresponding to a physical build of an occupant restrained by the webbing.

4,607,865

CONNECTOR, RATCHETING TYPE

David W. Hughes, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Oct. 16, 1984, Ser. No. 661,502

Int. Cl.⁴ F16L *55/00*

U.S. Cl. 285—18 **14 Claims**

1. A tieback connector for connecting a tieback conductor between a platform and a well system where the latter includes a hollow tubular member with internal threads for threadably receiving said connector, said connector comprising,

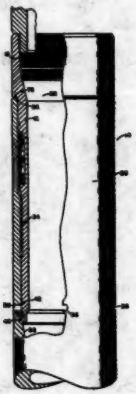
a hollow tubular body member connected to one of said tieback conductors,

a split ring positioned circumferentially of said body member with its inner wall and top and bottom ends spaced from said body member for limited radial expansion and contraction of said split ring and for limited axial movement of said split ring relative to said body member,

means between said split ring and body member whereby rotation of said body member also rotates said split ring,

external threads on said split ring capable of mating with said

internal threads and also capable of ratcheting by expansion and contraction of said split ring over said internal threads when said connector is inserted into said well system,



said ratcheting occurring until said body member reaches a predetermined position within said well system whereupon said threads overlap, and

means to lock said connector in said well system by the combined action of rotational and axial movement of said split ring.

4,607,866

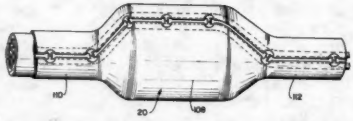
PROTECTIVE SLEEVE DEVICE

Max Erlichman, 461 Nelo St., Santa Clara, Calif. 95050

Filed Mar. 1, 1984, Ser. No. 585,236

Int. Cl.[4] F16L *11/12*

U.S. Cl. 285—45 **8 Claims**



1. A protective sleeve device adapted to be positioned in surrounding relationship around a juncture along a joined series of elongated pipes, cables, conduits or similar members, said sleeve device comprising:

a sheet of sleeve forming elastomeric material having first and second opposed side marginal areas which are juxtaposed to each other in confronting relationship when said sheet is wrapped in surrounding relationship around said juncture;

said first and second side edge marginal areas each including an end portion of said sheet folded back and attached to an adjacent portion of said sheet to form, respectively, first and second passageways;

first and second axially elongated rods having a spaced series of engagement means projecting therefrom transversely to the axis of elongation;

said first rod being disposed in said first passageway and said second rod being disposed in said second passageway;

said side marginal areas also having a spaced series of apertures formed therein in communication with said passageways;

said apertures along said first side marginal areas being aligned with those along said second side marginal areas when said marginal areas are in said juxtaposed position;

said engagement means projecting through said apertures to interlock said first rod and said second rod together and hence to retain said first and second side marginal areas in said juxtaposed position;

said engagement means being formed by alternating male and female connector members along each of said rods, with the male members projecting from said first rod being aligned opposite, and engaged with, the female members projecting from said second rod, and vice versa.

4,607,867

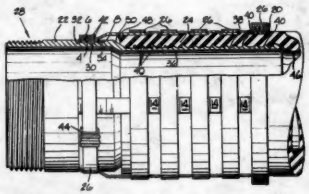
APPARATUS FOR SECURING A HOSE TO A FITTING

George A. Jansen, Denver, Colo., assignor to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

Filed Nov. 9, 1984, Ser. No. 670,557

Int. Cl.[4] F16L *33/00*

U.S. Cl. 285—242 **10 Claims**



1. Apparatus for restraining relative longitudinal movement between a fitting and a flexible hose comprising:

a relatively rigid fitting;

means forming at least one shoulder on said fitting and extending in a circumferential direction;

said fitting having a longitudinally extending first outer surface extending from adjacent to said one shoulder to one end of said fitting;

a flexible hose around said first outer surface;

said fitting having a longitudinally extending second outer surface extending from adjacent to said one shoulder toward the other end of said fitting;

at least two separate and elongated strips of material, each of said strips positioned to extend in a direction parallel to the longitudinal axis of said fitting;

one end of each of said elongated strips comprising a longitudinal portion that is bent back so as to be adjacent to the next succeeding longitudinal portion to form a shoulder on each of said elongated strips;

said shoulders on said elongated strips being located in direct abutting relationship with separate and circumferentially offset portions of said one shoulder so that longitudinal movement in substantially the direction of said one end of said fitting between the shoulder on each of said elongated strips and said one shoulder towards each other is limited by contact between the shoulder on each of said elongated strips and the corresponding said separate and circumferentially offset portion of said one shoulder, and so that substantially all of a longitudinal force applied to said elongated strips in substantially the direction of said one end of said fitting will be directly communicated to said separate and circumferentially offset portions of said one shoulder;

said elongated strips being positioned free from contact with each other;

the other end of each of said elongated strips being located over a portion of said flexible hose;

a first band clamp, positioned over said bent back portion and said next succeeding portion of each of said elongated strips, for holding said bent back portion of each of said elongated strips adjacent to a portion of said second outer surface, and for retaining the shoulder on each of said

elongated strips in direct abutting relationship with said one shoulder; and

at least a second band clamp around portions of said flexible hose and portions of each of said elongated strips for effecting a seal between said flexible hose and said first outer surface of said fitting and for preventing relative longitudinal movement between each of said elongated strips and said flexible hose.

4,607,868

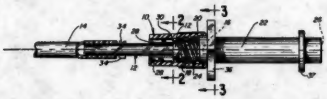
UNIVERSAL CONNECTOR

Roger W. Harvey, Vernon Hills, Ill.; Ralph Davis, Burlington, Wis.; Arthur Lueders, Mundelein, and William J. Schnell, Libertyville, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 30, 1983, Ser. No. 556,504

Int. Cl.[4] F16L *35/00*

U.S. Cl. 285—332 **6 Claims**



1. A universal connector for interconnecting a fluid flow conduit with either a threaded luer lock connector, a simple luer connector, or a spike connector, said universal connector comprising:

a tubular connector having an axis, said tubular connector being attachable at one end to the fluid flow conduit and having a luer taper tube portion at its axially opposite end;

a sleeve having internal threads and being carried by said tubular connector for movement along said axis between a first position, in which said sleeve encloses said luer taper tube portion, and a second position, in which said luer taper tube portion is exposed;

means operative, when said sleeve is in said first position, for permitting rotation of said sleeve about about enclosed luer taper tube portion to create, in response to the rotation of said sleeve, a removable threaded locking connection with the threaded luer lock connector, said means being alternately operative, when said sleeve is in said second position, for rotatably engaging said sleeve with said tubular connector to rotate said exposed luer taper tube portion along with said sleeve during the connection and disconnection of said exposed luer taper tube portion with the simple luer connector; and

a tubular member mating at one end with said enclosed luer taper tube portion and having at said one end external threads forming a removable threaded, locked connection with said internal threads of said sleeve in response to rotation of said sleeve, said tubular member having at its other end means for sealingly receiving the spike connector.

4,607,869

KNOT TYING APPARATUS

Joe C. Bersche, 222 Urbana Dr., Blackwell, Okla. 74631

Filed Feb. 11, 1985, Ser. No. 700,174

Int. Cl.[4] D03J *3/00*

U.S. Cl. 289—17 **5 Claims**

1. Apparatus for forming a loop in a string comprising,

(a) a plate means having first and second opposite pairs of edges;

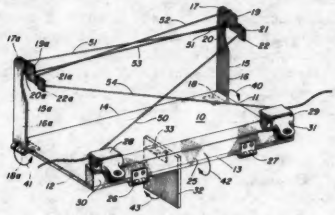
(b) first and second members;

(c) means for attaching said first and second members to said first pairs of opposite edges;

(d) Extension means attached to said first and second members for securing loops of said string to be formed;

(e) a third member attached to one of said remaining first and second pairs of opposite edges of said plate means; and,

(f) spaced clip means attached to said third member;



Whereby a string clipped in one of said clip means, and passed several times around said extension member and clipped to said remaining clip means is properly supported and positioned for tying.

4,607,870

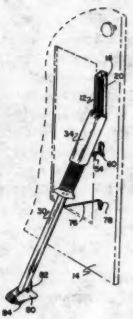
DOOR SECURITY DEVICE

Edward T. Crisp, Jr., 241 Ronnie La., Temple, Ga. 30179, and Willard M. Davidson, Jr., 3733 Shady Grove, Carrollton, Ga. 30117

Filed Sep. 9, 1985, Ser. No. 774,158

Int. Cl.[4] E05C *17/44*

U.S. Cl. 292—338 **9 Claims**



1. A security device for mounting to the inside face of a door to engage the floor to prevent the door from being opened, comprising:

a shaft;

shaft mounting means mounted to the face of the door for slidably and pivotably mounting the upper end of said shaft such that the shaft can slide vertically within upper and lower limits and pivot relative to the door;

a control rod;

shaft slide means mounted to said shaft at an intermediate point for pivotably and slidably mounting a first end of said control rod such that said control rod can pivot and slide within upper and lower limits substantially parallel to the longitudinal axis of said shaft;

control rod mounting means for pivotably mounting a second end of said control rod to the door such that the first end of said control rod bears against the upper limit of said shaft slide means when the upper end of said shaft is substantially at the upper limit of said shaft mounting means;

means for urging the portion of said shaft below said shaft slide means downwardly and toward the face of the door;

whereby said security device is extendable to engage the floor by rotating said shaft about its upper end, said urging means

urging said shaft downwardly so that said upper end of said shaft slides downwardly within its mounting means, and said urging means initially urging the first end of said control rod against said upper limit of said shaft slide means to support said intermediate point of said shaft against downward motion, and subsequently urging the first end of said control rod toward said lower limit of said shaft slide means to permit said intermediate point of said shaft to move downwardly, thereby bringing the lower end of said shaft into contact with the floor.

4,607,871

TOOL FOR HANGING BASKETS

Chester M. Kirkman, 142 Wild Orchid La., Orange Park, Fla. 32073

Filed Feb. 6, 1985, Ser. No. 698,684
Int. Cl.[4] A47F *13/06*; A47G *7/00*
U.S. Cl. 294—19.1 **6 Claims**

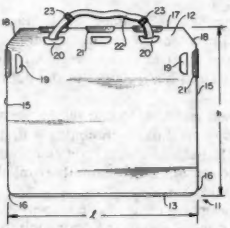
1. A tool for handling hanging baskets comprising an elongated handle with a bifurcated yoke at one end thereof opening upward away from the handle, a ring support freely pivotally fastened at diametrically opposite points to the ends of said yoke with said ring support adapted to pivot inside the yoke, a first hook member attached to the outside of one of said ends of the yoke with the opening of said first hook member facing downward toward the handle, and a second hook member attached to the other of said ends of the yoke with the opening of said second hook member facing upward away from said handle.

4,607,872

SNOW REMOVING DEVICE

Peter L. Herner, R.D. #1, 155 Stephen Park Rd., Hackettstown, N.J. 07040

Filed Jun. 24, 1985, Ser. No. 747,776
Int. Cl.[4] E01H *5/02*
U.S. Cl. 294—54.5 **3 Claims**



1. A device for hand plowing snow angularly to the path of clearing comprising a rigid but flexible sheet material having a smooth plowing surface and having a width greater than its length, a bottom edge, a top edge, and side edges, and having at least two top slots located in the top portion of said sheet material; at least one side slot located on each side of said sheet material, means to prevent chafing and pressure to the hand located adjacent each said top slots and said side slots, and rounded convex corners between said side edges and said bottom edge;

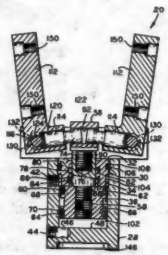
whereby said device is held angularly to said path of clearing with said bottom edge engaging said path through grasping at a top slot and a side slot and moving said device forwardly to said path.

4,607,873

GRIPPER APPARATUS

Kay T. Nusbaumer, Ft. Wayne, and Bruce D. McIntosh, Monroeville, both of Ind., assignors to PHD, Inc., Ft. Wayne, Ind.

Continuation of Ser. No. 517,329, Jul. 26, 1983, abandoned. This application Aug. 30, 1985, Ser. No. 771,297
Int. Cl.[4] B25J *15/00*
U.S. Cl. 294—88 **16 Claims**



1. Gripping apparatus, comprising:

a supporting body;

a pair of opposed spaced apart levers, each said lever having a mounting arm and a gripping arm angularly joined together at one of their respective ends, one of said levers being independently pivotally mounted, substantially at the joinder of its said mounting arm and said gripping arm, to said supporting body for pivotal movement of its gripping arm toward and away from the gripping arm of the other of said levers, said other lever being operably mounted to said supporting body;

a distal end of said mounting arm of said one of said levers being formed to have a substantially spherical shape truncated to have a substantially planar surface in direct facing relationship with the mounting arm of said other lever;

an actuating member reciprocably mounted in said supporting body so as to be generally disposed between respective distal ends of said mounting arms of said levers, said actuating member being reciprocable in a direction orthogonal to a line projecting between said respective distal ends, said actuating member including a substantially circularly cylindrical opening therein axially oriented orthogonally to the direction of reciprocation of said actuating member and generally along said line projecting between said respective distal ends, said cylindrical opening being operably coupled to said spherical end of said mounting arm of said one lever toward and away from said other lever upon reciprocable movement of said actuating member;

means for reciprocating said actuating member;

said other lever being independently pivotally mounted substantially at the joinder of its said mounting arm and said gripping arm, to said supporting body, said levers being pivotal toward and away from each other about spaced parallel pivot axes, said actuating member being generally between said pivot axes and likewise operably coupled to said mounting arm of said other lever to pivot said levers toward and away from each other in unison upon reciprocal movement of said actuating member

under actuation of said means for reciprocating said actuating member;

said means for reciprocating said actuating member is a piston-cylinder assembly within said supporting body, said piston being connected to said actuating member; and

said means including a bushing member for securing said piston in said cylinder, and wherein said apparatus further includes a pair of bushing blocks respectively disposed on opposite sides of and slidably abutting against said mounting arms of said levers, said bushing blocks abutting against said bushing member, said bushing blocks being secured to said supporting body to thereby secure said bushing member in said cylinder, each of said levers being pivotally supported between said pair of bushing blocks by a respective wrist pin received through a hole at the pivot axis thereof and in bearing openings in respective said bushing blocks, said bushing blocks abutting against and reciprocably supporting said actuating member therebetween.

4,607,874

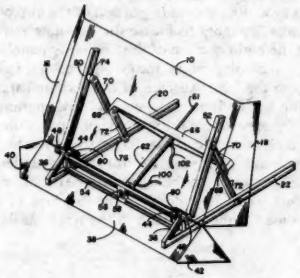
AIR DEFLECTOR APPARATUS

Charles E. Peairs, 130 E. Jersey St., Gladstone, Oreg. 97027

Continuation of Ser. No. 186,751, Sep. 12, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,487

Int. Cl.[4] B60J 9/04

U.S. Cl. 296—1 S **6 Claims**



1. An air deflector apparatus for a vehicle, said apparatus comprising:

an upraisable deflector shield having a surface area adapting the same to deflect an oncoming airstream up and over said vehicle as the vehicle moves forwardly,

first means for pivoting a forward portion of said deflector shield relative to a top portion of said vehicle,

brace arm means mounted rearwardly of said first means and pivotally connected to said shield for bracing the same in an upraised position,

and controllable actuating means comprising a pneumatic cylinder for changing the relative positions of said shield and said brace arm means for moving said brace arm means between a first location wherein said shield is lowered toward the top of said vehicle and a second location defining a direct bracing position wherein the weight of said shield including the force of the airstream thereagainst is shifted from said actuating means to said brace arm means for bracing said weight directly against the top portion of said vehicle,

wherein said brace arm means comprise first and second struts respectively pivotally connected to said shield and the top of said vehicle as well as pivotally connected to each other, third and fourth struts respectively pivotally connected to said shield and the top of said vehicle as well as pivotally connected to each other, and cross means joining the pivotal connection between the first and second struts and the pivotal connection between the third and foruth struts,

said actuating means being disposed substantially between the pivoting axis of said first pivoting means and said cross means for moving the struts between a said first location wherein the first and second struts define an angle therebetween and the third and fourth struts define an angle therebetween of substantially less than 180°, and a said second location wherein said struts are more nearly aligned,

the pivotal connection between said struts in said first location being farther away from said first pivoting means than when in said second location such that said struts fold away from said first pivoting means in said first location providing access for said actuating means between said cross member and the pivoting axis of said first pivoting means.

4,607,875

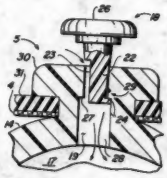
DETACHABLE SUNSCREEN FOR VEHICLE WINDOWS

Kermit L. McGirr, 6243 S. 4th Ave., Phoenix, Ariz. 85041

Filed Dec. 10, 1984, Ser. No. 679,891

Int. Cl.[4] B60J 1/20

U.S. Cl. 296—97 D **13 Claims**



1. A readily detachable sunscreen for a windshield or other window of a vehicle comprising:

A. a sheet of sunscreen material dimensioned and configured to conform to the contour and shape of the window or window portion to be shielded; and

B. a plurality of suction cup assemblies fixed to and distributed about said sheet of sunscreen material for engaging and sticking to a surface of the window, thereby supporting said sheet of sunscreen material on the window in generally parallel relationship thereto;

C. each of said suction cup assemblies comprising:

1. a flexible bell portion having a concave inner surface and an opening bounded by circumferential lips adapted to conform to and sealingly engage said window surface and therewith define a cavity, said bell portion further having a neck portion extending axially away from the plane defined by said lips, said neck portion having a generally cylindrical axial aperture passing therethrough, said axial aperture comprising:

a. a resiliently deformable upper aperture region;

b. a lower aperture region coaxial with said upper aperture region;

i. said lower aperture region being of larger radius than said upper aperture region and opening into said cavity; and

c. a shoulder defined by the junction of said upper and lower aperture regions;

2. a stopper member disposed in said axial aperture and adapted for axial translation between first and second terminal positions;

a. said stopper member being dimensioned and downwardly tapered along an upper portion of its length to closely engage and slightly deform said upper aperture region when disposed in said first terminal position to thereby seal off said cavity such that a suction

may be maintained in said cavity when said lips sealingly engage said window surface;

b. said stopper member having a relieved region along a lower portion of its length providing clearance between said stopper member and said upper aperture region, said lower portion being disposed closer to said opening than said first portion and being dimensioned and configured such that, when said stopper member is in said second terminal position, a communications path is established through said axial aperture to place said cavity at atmospheric pressure, thereby releasing said suction cup assembly from said window surface; and

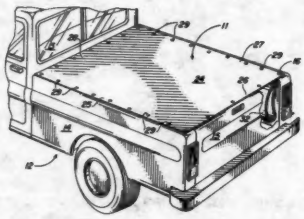
c. said stopper member including a finger projecting outwardly from said lower portion and adapted to engage said shoulder when said stopper member is in said second terminal position, thereby limiting the axial translation of said stopper member and retaining said stopper member in said axial aperture.

4,607,876

COVER FOR BED OF PICKUP TRUCK

David M. Reed, 1924 E. 5th Ave., Mesa, Ariz. 85204

Filed Jan. 29, 1985, Ser. No. 696,028
Int. Cl.[4] B60P *7/02*
U.S. Cl. 296—100 **1 Claim**



1. A cover adapted to be attached to the bed of a truck, the truck bed including

at least a pair of opposed upstanding side walls each having an upper generally horizontally oriented edge, and

a floor intermediate said walls,

said cover including

(a) an articulated support frame including a plurality of rigid, elongate elements adapted to be assembled to define a chamber and disassembled for compact storage;

(b) a first sheet of pliable material having at least a pair of opposed side edges adapted for detachable connection to said bed walls to tension said first sheet in generally horizontal orientation spanning said floor;

(c) a second sheet of pliable material attached to said first sheet and having

(i) an outer edge adapted for connection to one of said side walls of said truck bed, and

(ii) an inner edge attached to one of said side edges of said first sheet;

(d) a third sheet of pliable material attached to said first sheet and having

(i) an outer edge adapted for connection to the other side of said side walls of said truck bed, and

(ii) an inner edge attached to the other of said side edges of said first sheet;

said second and third sheets being folded inside said bed walls beneath said first sheet when said opposed side edges of said first sheet are detachably connected to said bed walls to tension said first sheet to span said floor and when said frame is disassembled; and,

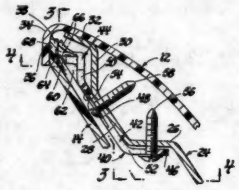
said first, second and third sheets fitting over said frame with said outer edges of said second and third sheets connected to said bed walls when said opposed side edges of said first sheet are disconnected from said bed walls and said frame is assembled in said bed beneath said first, second and third sheets.

4,607,877

VEHICLE BODY PANEL ARRANGEMENT

Alan J. Shelton, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 30, 1985, Ser. No. 781,872
Int. Cl.[4] B62D *27/04*
U.S. Cl. 296—191 **1 Claim**



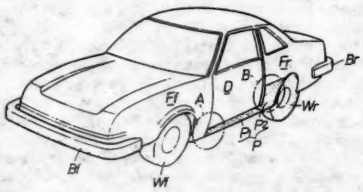
1. The combination comprising, a first vehicle body panel having a bight portion including a terminal flange, a second vehicle body panel having an edge portion thereof located within the bight portion of the first panel, and a clip for resiliently holding the outer surface of the edge portion of the second panel to the inner surface of the terminal flange of the first panel and including a body portion and a retaining portion, means mounting the body portion of the clip on a vehicle body structural member to locate the retaining portion of the clip within the bight portion of the first body panel, the retaining portion including rigid means spaced a predetermined distance from the inner surface of the terminal flange of the bight portion and defining therewith a throat permitting insertion of the edge portion of the second body panel therebetween with limited clearance, the retaining portion further including deflectable means overlying the throat and deflectable into resilient engagement with the inner surface of the edge portion of the second panel to hold the outer surface of such edge portion against the inner surface of the terminal flange of the first panel.

4,607,878

BODY STRUCTURE FOR AUTOMOBILES

Takanobu Itoh, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1984, Ser. No. 620,495
Claims priority, application Japan, Jun. 17, 1983, 58-109073; Jun. 17, 1983, 58-109074; Jun. 20, 1983, 58-110692
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—199 **10 Claims**



1. An automobile body structure for a skeletal body having a front fender portion, a door sill portion and a rear fender portion, the improvement comprising an integral synthetic resin panel having a front portion covering the door sill portion and a rear portion covering the front lower portion of the rear fender portion of the skeletal body and wherein means are provided for mounting said panel on said skeletal body in a

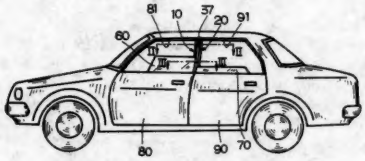
manner for allowing longitudinal expansion and contraction of said panel relative to said skeletal body and wherein said mounting means include an inwardly offset portion on the forwardmost edge of said panel which is slidably clamped between said front fender portion of the skeletal body and the front fender.

4,607,879

VEHICLE DOOR STRUCTURE

Katsunori Mori; Takuji Shimoda, both of Toyota, and Kiyokazu Seo, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 2, 1985, Ser. No. 751,222
Claims priority, application Japan, Jul. 5, 1984, 59-101724[U]
Int. Cl.[4] B60J *1/08;* E06B *7/22*
U.S. Cl. 296—201 18 Claims



1. A vehicle door structure comprising:

a door glass, which is displaceable within a door mounted on a vehicle;

means for sealing between the door glass and a body side member of the vehicle, said sealing means including a first portion and a second portion, the first portion of said sealing means comprising solid rubber, the second portion of said sealing means comprising sponge rubber, the first portion of said sealing means including a first recess, the second portion of said sealing means including a second recess and a contact portion, the contact portion positioned at an outside surface of the vehicle, said contact portion being defined between the body side member of the vehicle and the door glass, the contact portion adapted for contact with said door glass, the first recess of the first portion of said sealing means being located adjacent to the adjacency of the outside surface of the vehicle; and

means for fastening said sealing means to the body side member of the vehicle, said fastening means having a first hook and a second hook, the first hook of said fastening means adapted to be inserted into the first recess of the first portion of said sealing means, the second hook of said fastening means adapted to be inserted into the second recess of the second portion of said sealing means.

4,607,880

KNOCKDOWN PICNIC TABLE

Yves Gastebled, 443 St-Vincent, Montreal, Quebec, Canada (H4N 3A6)

Filed Mar. 19, 1984, Ser. No. 590,972
Claims priority, application Canada, Mar. 18, 1983, 423908
Int. Cl.[4] A47B *37/04*
U.S. Cl. 297—157 1 Claim

1. A knockdown table comprising:

a table-top having four corners and two long sides, said table-top being provided with a tubular receptor extending parallel to its long sides near each corner;

a pair of narrow, rectangular benches each positioned on one long side of, and below, the table-top, each of said benches being provided near each end with a tubular receptor extending perpendicularly to the table receptors; and

four supports for connecting the benches and the to together off the ground at a proper height, each of said supports comprising:

(a) a ground-engaging portion;

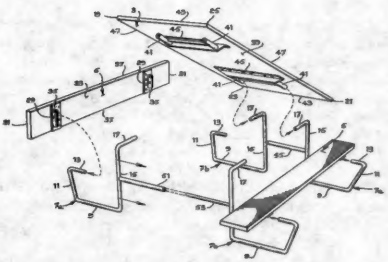
(b) a first leg extending up from said ground-engaging portion to support the table-top near one of its corners;

(c) a second leg extending up from said ground-engaging portion to support one end of one of said benches, said second leg being shorter than the first one;

(d) a first connecting pin extending horizontally at the upper end of the first leg in such a direction as to slidably engage the tubular receptor at the one corner of the table-top;

(e) a second connecting pin extending horizontally at the upper end of the second leg in a direction perpendicular to the direction of the first connecting pin so as to slidably engage the tubular receptor at the one end of the one bench,

(f) each support being formed from a single piece of tubing material bent to provide the ground-engaging portion, the first and second legs and the first and second connecting pins;



(g) the supports located at diagonally opposed corners of the table-top are identical in shape, the supports located at one set of diagonally opposed corners having their first connecting pins extending in a direction opposite to the first connecting pins of the supports located at the other set of diagonally opposed corners; and

(h) each support being provided with brace means cooperating with brace means provided on the support extending directly across from it at one end of the table-top to provide a cross-brace between the supports at said end of the table, said cooperating brace means comprising complementary telescopic, tubular members extending horizontally inwardly from about the mid-height of the first legs of the said respective supports;

whereby, by having the first and second connecting pins on each support at right angle to each other, the supports are locked in place when slidably connected to the benches and table-top, such a locking causing said benches and table-top to be securely held in place without tools, fasteners or separate connectors.

4,607,881

SEAT CADDY FOR SPECTATOR SEATING

Bruce C. Merrick, 3505 Locust Ct., Prospect, Ky. 40059

Filed Dec. 10, 1984, Ser. No. 680,159
Int. Cl.[4] A47C *9/14*
U.S. Cl. 297—192 5 Claims

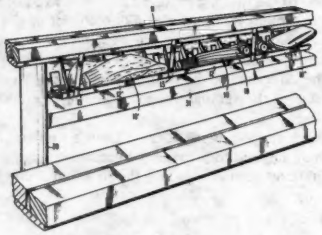
1. A seat for spectator seating, comprising:

a bleacher seat plank;

a rack sized and adapted to extend along the underside of said bleacher seat plank, said rack including an article supporting bottom and a back portion integrally formed with said bottom and including fastening means for depending said back portion from the rear underside of said bleacher seat plank, said bottom aligned vertically below said bleacher seat plank and said back portion having a

sufficiently closed construction to prevent passage of articles therethrough; and

a plurality of support members horizontally spaced apart and extending vertically between the bottom of said rack and said bleacher seat plank, said bleacher seat plank, bottom of said rack and adjacent ones of said support members



together defining an access opening therebetween for placing and removing articles to and from said rack,

wherein said rack integrally includes means for interlocking said rack to another similarly formed rack fastened to said plank in order to form a continuous rack along substantially the full length of said bleacher seat plank.

4,607,882

CHAIR WITH SADDLE SHAPED SEAT AND MEMBERS EXTERNALLY TRANSVERSELY THEREFROM

Peter Opsvik, Hogtunvn. 12, N-1370 Asker, Norway

Filed Dec. 6, 1984, Ser. No. 678,710

Claims priority, application Norway, May 8, 1984, 841844

Int. Cl.[4] A47C *7/31*

U.S. Cl. 297—195 **20 Claims**

1. A chair having a seat wherein said seat has a longitudinal saddle shaped part, said saddle shaped part having an upper surface cross-section approximately in the shape of an inverted U, and further having saddle-like members projecting transversely out from a mid portion of each longitudinal side of said seat part to support the rear, upper thigh portion of a user of the chair.

4,607,883

RECLINING MECHANISM FOR EASY CHAIR

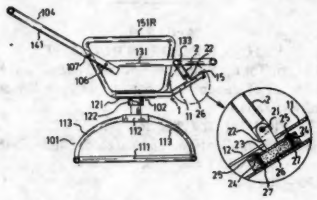
Huang Y. Tzu-Chun, No. 36, Chien Kuo Rd., Kuei Shan Industrial Park, Tao Yuan, Taiwan

Filed Aug. 23, 1985, Ser. No. 768,758

Int. Cl.[4] A47C *1/02*

U.S. Cl. 297—317 **1 Claim**

1. A reclining mechanism for easy chair or swivel chair of the type including a leg base and a chair seat, said mechanism comprising a guide tube firmly secured above the leg base, a jack stay projected from beneath the chair seat; said guide tube being slightly tilted upward at the front portion thereof to form an obliquely extended tube, said extended tube having a guide slot formed on the upper side thereof, a guide bar pivotably connected with the lower end of said jack stay and adapted to pass through said guide slot, said guide bar being provided at the lower end thereof with a sliding member which is contained and slidably movable in said extended tube, a space



formed between said sliding member and an inner wall of one side of said obliquely extended tube, and an arc-shaped spring plate mounted on the inner side wall of said extended tube, said spring constantly pressing against said sliding member so as to exert a slow-down effect on the movement of said sliding member.

4,607,884

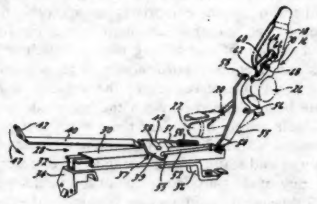
VEHICLE EASY ENTRY SEAT LATCHING MECHANISM

Dennis H. Heling, Canton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 6, 1984, Ser. No. 638,311

Int. Cl.[4] B60N *1/04*

U.S. Cl. 297—341 **5 Claims**



1. An easy entry seat latch mechanism adapted for a vehicle seat assembly including a seat cushion and a seat back, hinge means providing pivotal movement of said seat back relative to said seat cushion about a generally horizontal first axis between a generally upright normal position and a forwardly tilted position, track means mounting said seat cushion on said vehicle for horizontal movement to a plurality of fore and aft horizontal adjusted positions, a track latching assembly on said track means and resiliently biased in a latch direction by first spring means, said easy entry seat latching mechanism comprising,

a lever member rotatably supported on said hinge means for pivotal movement about a second axis substantially parallel to said first axis;

means connecting said lever member to said track latching assembly such that said first spring means biases said lever member for rotation in a first track locking direction;

a dual acting seat back latch mechanism mounted on said seat back, said latch mechanism including second spring means biasing said latch mechanism into its latched mode;

said seat back latch mechanism initially operative, when said seat back is first pivoted forwardly to contact said lever member causing said lever member to be rotated in a second direction whereby said track latching assembly is unlocked freeing said seat cushion for horizontal move-

ment on said track means to an easy entry forward position,

said seat back latch mechanism subsequently operative upon said seat back being further pivoted to a forward tilted position to lockingly engage said lever member; and

said seat cushion operative to be moved rearwardly from its easy entry position to a selected horizontal position, whereby upon subsequent pivoting of said seat back to its upright position by a force sufficient to overcome the resilient bias of said second spring means causes said seat back latch mechanism to unlock said lever member for rotation of said lever member in said first direction such that said first spring means returns said track latching assembly to a locked condition thereby maintaining said seat cushion in said selected horizontal position.

4,607,885

HEAD RESTRAINT FOR CHILD'S SEAT

Jose M. Q. del Fierro, 530 Mill Ave. S., Unit #1, Renton, Wash. 98055

Filed Jan. 22, 1985, Ser. No. 693,523
Int. Cl.[4] A47C *7/38*
U.S. Cl. 297—397 **10 Claims**

1. A head restraint device for preventing possibly injurious forward and lateral motion of the head of a child seated in a conventional child's seat, comprising:

a rigid U-shaped restraining member which surrounds the forward and lateral portions of the child's head when the restraining member is positioned with distal ends thereof adjacent a forward surface of a seat back of any selected one of various conventional child's seats of different forms, and is of a size not to be uncomfortable yet be engaged by the child's head and restrain such from any more than minimal forward and lateral motion;

support members, each attached to one end of the restraining member, which aid in maintaining the restraining member rigid with respect to the forward surface of the seat back and positioned in place around the child's head; and

flexible tether means fixedly attached to the restraining member, and firmly yet adjustably holding the ends of the restraining member against the forward surface of the seat back; wherein the head restraint is readily attachable to said child's seat by engagement of the tether means with the seat back.

4,607,886

TRUCK HEADREST

Mike S. Mazhar, 25472 Bunker Hill Blvd., Hayward, Calif. 94542

Filed Sep. 30, 1985, Ser. No. 781,468
Int. Cl.[4] A47C *7/36*
U.S. Cl. 297—410 **9 Claims**

1. A headrest including:

a cushion having

a cushion support plate intersecting

a cushion attachment surface at a first angle,

a neck support plate intersecting the cushion support plate at a second angle, and

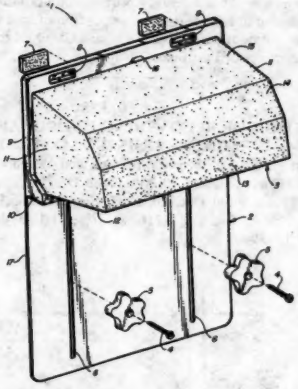
a first head support plate intersecting the neck support plate at a third angle;

a back plate attached to the attachment surface having

a plurality of linear adjustment channels,

at least one adjustment socket,

a protective flange surrounding the perimeter of the cushion attachment surface, and



a support flange extending outwardly from a bottom end of the protective flange adjacent to the cushion support plate;

adjustable attachment means slidably engagable in the plurality of adjustment channels; and

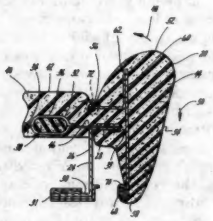
at least one resilient pad attached to a rear surface of the back plate.

4,607,887

ENCAPSULATED BOLSTER

Curtis F. Vail, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Feb. 24, 1984, Ser. No. 583,528
Int. Cl.[4] B60N *1/06*; A47C *7/02*
U.S. Cl. 297—452 **14 Claims**



1. In a seat assembly having a base frame and a seat cushion providing an occupant seating surface and a lateral support bolster along a lateral side of said occupant seating surface to provide lateral support for a seated occupant, the improvement which comprises said seat cushion and said bolster comprising a continuous foam medium encapsulating a portion of said frame and forming a body portion of said bolster and a body portion of said seat cushion, said medium having a joining portion defining a line of pivoting between said two body portions so that said bolster can pivot via said joining portion relative to said seat cushion, said bolster including insert structure internal of said body portion of said bolster and separate from said frame, said bolster and its insert structure having a

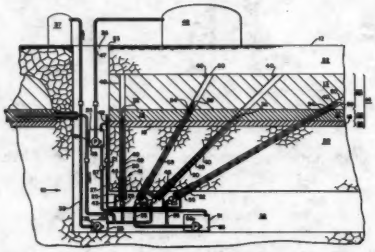
major dimension disposed generally transversely to the lateral extent of said seat cushion, said bolster having top, laterally outboard and bottom surface portions, said seat assembly further including a cover overlying said seat cushion and extending outwardly laterally thereof to also overlie said joining portion and said top, laterally outboard and bottom surface portions of said bolster, said insert structure having a bottom edge portion adjacent said bottom surface portion which is exterior of said bolster body portion, said cover having an edge terminating at said bottom edge portion of said insert structure, and securement means securing said cover edge to said bottom edge portion of said insert structure.

4,607,888

METHOD OF RECOVERING HYDROCARBON USING MINING ASSISTED METHODS

Robert H. Trent, Longmont, Colo., and W. Ray Oakley, Douglas, Wyo., assignors to New Tech Oil, Inc., Spokane, Wash.

Filed Dec. 19, 1983, Ser. No. 563,184
Int. Cl.[4] E21C *41/10*; E21B *43/40*
U.S. Cl. 299—2 **11 Claims**



1. A method for recovering a desired fluid hydrocarbon from an underground porous formation having a bottom impermeable to said fluid hydrocarbon and containing said hydrocarbon and at least one other fluid having a specific gravity different from said hydrocarbon, comprising the steps of:

a. forming an excavation having a portion thereof below said porous formation;

b. forming a plurality of openings extending from said portion of said excavation into said porous formation;

c. inserting collection means into said porous formation through said openings to separately collect said hydrocarbon and said at least one other fluid;

d. collecting a quantity of said at least one other fluid;

e. circulating said collected at least one other fluid from said porous formation to a point below said porous formation and at least one time back through said porous formation to wash said hydrocarbon therefrom and to form, in said porous formation, a pool of said hydrocarbon and a substantially separate layer of said at least one other fluid;

f. regulating the height of said hydrocarbon collection means and the volume of said collected at least one other fluid in said porous formation to maintain said hydrocarbon collection means in fluid communication with said pool of hydrocarbon;

g. collecting said hydrocarbon from said pool thereof; and

h. conveying said collected hydrocarbon to the surface.

5. A system for recovering fluid hydrocarbon from an underground porous formation containing said fluid hydrocarbon interspersed within porous interstices of said porous formation and containing at least one other fluid having a specific gravity different than that of said hydrocarbon, a portion of said at least one other fluid in a substantially separate layer horizontally through said porous formation adjacent a formation bottom impermeable to said fluid hydrocarbon and which underground porous formation has an excavation thereunder and at least one opening from said excavation up into said porous formation, comprising:

a. means inserted through said at least one opening for circulating a quantity of said at least one other fluid from said separate layer thereof to a point below said formation and then up and through said porous formation to wash said interspersed hydrocarbon therefrom and into a pool of said hydrocarbon substantially separate from said substantially separate layer of said at least one other fluid and to return said at least one other fluid to said substantially separate layer thereof;

b. means inserted through said at least one opening for collecting said hydrocarbon from said pool thereof from below;

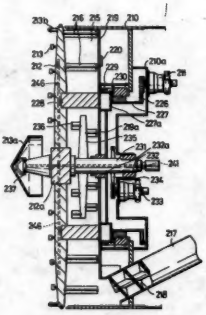
c. means in fluid communication with said means for collecting said hydrocarbon for conveying said collected hydrocarbon to above the ground.

4,607,889

SHIELD TUNNEL BORING MACHINE

Hakumi Hagimoto; Yutaka Kashima; Norio Kondo, and Masumi Inoue, all of Tokyo, Japan, assignors to Daiho Construction Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,063
Int. Cl.[4] F21D *9/08*
U.S. Cl. 299—33 **4 Claims**



1. A shield tunnel boring machine for boring a tunnel in the earth, comprising:

a cylindrical shield having a longitudinal axis;

a bulkhead in said shield for defining a forward open chamber at a forward end of said shield, said bulkhead comprising an outer peripheral bulkhead part fixed to said shield and a central bulkhead part rotatable about the longitudinal axis of said shield;

a main motor secured inside said shield for rotating said central bulkhead part;

a rotary cutter coupled through a rotary support to said central bulkhead part, said rotary cutter being in front of said forward open chamber to bear against a tunnel face for excavating earth therefrom;

a plurality of forward projecting cutter bits extending from a front face of said rotary cutter;

a plurality of kneading blades extending rearwardly from a rear face of said rotary cutter into said outer peripheral part of said forward open chamber parallel to the longitudinal axis of said shield;

a rotary shaft supported rotatably along the longitudinal axis of said shield independently of said rotary cutter;

a submotor secured inside said shield for rotating said rotary shaft;

a kneading wing fixedly mounted on said rotary shaft and extending radially from said rotary shaft in a central zone of said chamber, said kneading wing having a front face and a back face;

a plurality of auxiliary kneading blades extending from the

front and back faces of said kneading wing parallel to the longitudinal axis of said shield;

means disposed between the fixed outer peripheral bulkhead part and the rotatable central bulkhead part for forming a seal therebetween;

means for supplying a muddying material to a forward side of said chamber, said muddying material being mixed and kneaded by said kneading wing and blades with the excavated earth in said chamber to render excavated water-containing earth introduced into the chamber to be a mud having a viscosity that provides resistance to ground pressure and to underground water pressure at the tunnel face while being conveyable from said chamber; and

means contiguous to said chamber for discharging said mud out of said chamber.

4,607,850

GUIDES FOR MINERAL MINING MACHINES

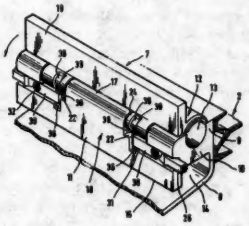
Gerhard Merten; Bernd Steinkuhl, both of Lunen, and Alois Hauschopp, Werne, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Aug. 21, 1984, Ser. No. 642,866

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1983, 3330955

Int. Cl.[4] E21C *35/20*

U.S. Cl. 299—43 **19 Claims**



1. In a guide for mineral mining composed of a plurality of individual sections (7) joined end-to-end with the aid of detachable coupling means (26,30), each section comprising means defining upper and lower passages (13, 14) along which a drive chain is circulated during use, said defining means including spacers (10) separating the passages, a generally upstanding fixed web plate component (11) with a planar outer face (18) disposed outwardly of the spacers relative to the passages, a cover (12) which serves to close off the upper passage, and hinge means (23, 24) between the web plate component and the cover for permitting the cover to be pivoted between closed and open positions; the improvements characterized by: the web plate component being extended upwardly to at least a level substantially corresponding to the center of the upper passage, and compartments (22) formed in the web plate component in which said hinge means are located, the compartments and the hinge means being located above the coupling means and in alignment with the upper passage to reduce the size of the cover and the distance outwardly from the web plate component to which the cover pivots to the open position.

4,607,891

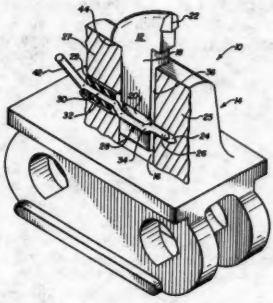
ROTARY RETAINER FOR MINING BITS

Eugene F. Pendolino; Wayne L. Edmondson, both of Franklin, and Michael L. O'Neill, Lucinda, all of Pa., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed May 31, 1985, Ser. No. 739,945

Int. Cl.[4] E21B *10/00*

U.S. Cl. 299—92 **9 Claims**



5. A cutter bit holding assembly of a mining machine comprising:

a cutter bit having a shank portion;

a support member having a socket for receiving the shank portion of said cutter bit, and a transverse bore relative to the socket extending within said support member partially intersecting the socket thereof define a grooved bore portion immediately adjacent and opening into the socket;

a rotary locking means positioned within the transverse bore of said support member having turning means and an offset portion positioned within the grooved bore portion adjacent the support member socket for rotation from a first position wherein the offset portion is positioned outside of the socket to permit unencumbered insertion or removal of said bit to a second position wherein the offset portion intersects the socket and engages a locking surface from the shank portion of said cutter bit to securely hold said bit within the socket of said support member; and

retaining means for preventing rotation of said rotary locking means when positioned in its second position engaging the locking surface of said bit.

4,607,892

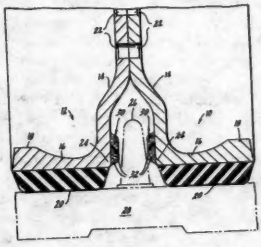
TRACKED VEHICLE ROAD WHEEL

Roger E. Payne, Okemos, and James B. Weeks, Eaton Rapids, both of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Filed Apr. 12, 1984, Ser. No. 600,791

Int. Cl.[4] B62D *55/12*

U.S. Cl. 305—56 **11 Claims**



1. A road wheel for track-laying vehicles which comprises a

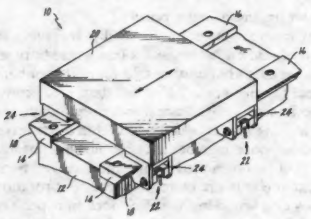
circular disc and an annular rim integrally axially projecting from the periphery of said disc forming a shoulder at the juncture of said rim and disc, said rim and disc being of one-piece mold-formed construction of composition selected from the group consisting of aluminum and fiber-reinforced resin, and an annular band of wear-resistant material integrally embedded in said mold-formed construction forming a self-replenishing axially facing wear surface at said shoulder, said band comprising a length of wear-resistant ribbon stock coiled on edge and molded into said shoulder with one edge at said surface and with the width of said ribbon stock extending into said shoulder.

4,607,893

MACHINE SLIDE BEARING ASSEMBLY

Frank M. Damico, Neenah, Wis., assignor to Detroit Edge Tool Company, Detroit, Mich.

Filed Jan. 11, 1985, Ser. No. 690,677
Int. Cl.[4] F16C *29/06*
U.S. Cl. 384—45 23 Claims



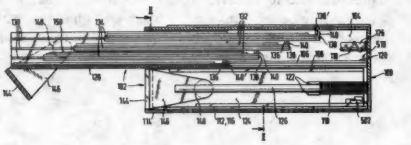
1. A bearing assembly for a machine slide mounted for rectilinear movement along ways on the machine, each way having at least one pair of flat guide surfaces, comprising a bracket having a base adapted to be fixedly mounted on the machine slide, a first anti-friction cartridge mounted on said base, means in said cartridge defining a flat bearing surface adapted for engagement with one of the guide surfaces on the ways, said base having a pair of legs depending from opposite ends thereof, said legs having a pair of axially aligned bores therein, the axis of which extends accurately parallel to and offset from the bearing surface of said cartridge, a shaft rotatably supported in said aligned bores, said shaft having a cylindrical portion rotatably fixed thereon between said legs and eccentric to said axis, an adjusting block rotatably supported on the eccentric portion of the shaft, a second anti-friction cartridge fixedly mounted on the adjusting block, means in said last-mentioned cartridge defining a flat bearing surface accurately parallel to said axis and adapted for engagement with the other guide surface on the ways, means for rotating said shaft in opposite directions to retract and extend said last-mentioned cartridge and the bearing surface thereon toward and away from said axis and means for locking said shaft in a rotatively adjusted position on said body, whereby, when the base is mounted on a slide and positioned on the ways with the bearing surface of the first-mentioned cartridge engaging one guide surface of the ways, said shaft is adapted to be rotated to displace the bearing surface of the second cartridge to an extended position in flat bearing engagement with the other guide surface on the ways and thereafter locked to retain the bearing surfaces in engagement with the guide surfaces of the ways.

4,607,894

DEVICE FOR STORING GRAMOPHONE AND VIDEO DISCS

Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Inventions & Development of Novelties AG, Chur, Switzerland

Filed Aug. 28, 1984, Ser. No. 645,071
Claims priority, application European Pat. Off., Aug. 29, 1983, 83108479.3
Int. Cl.[4] A47B *88/04*
U.S. Cl. 312—15 20 Claims



1. Apparatus for use in the storage of disc-shaped record media comprising:

housing means, said housing means being open on only one side, said open side defining a generally planar housing front;

a plurality of holder means, said holder means receving and storing disc-shaped record media, said holder means each having a generally rectangular shape with side edges and being slidably mounted in said housing means in a stacked relationship;

transport slider means, said transport slider means being positioned in said housing means for reciprocal movement through said housing means open side between an inserted position and an ejected position, said reciprocal movement being in a direction which is generally transverse to said housing front, said transport slider means including:

a base defining member;

cover defining means movably coupled to said base defining member, said cover defining means comprising a front wall which extends transversely with respect to the direction of movement of said transport slider means when said transport slider means is in the inserted position to cover said housing means open side; and

means for supporting said cover defining means, said supporting means enabling simultaneous movement of said cover defining means with said base defining member and relative to said base defining member, said relative movement including at least a directional component which is at an angle with respect to the direction of movement of said base defining member, said relative movement of said cover defining means during movement of said transport slider means form the inserted to the ejected position providing simultaneous access to said plurality of said holder means when said slider means is in the ejected position;

means coupling said transport slider means to at least a first of said holder means whereby movement of said slider means will be imparted to said first holder means;

means establishing a driving connection between said first of said holder means and the remainder of said holder means, said driving connection establishing means including means mechanically interconnecting said holder means, said interconnecting means engaging each of said holder means at a point which is offset from a first side edge thereof by a different distance than the point of engagement with the other of said holder means;

fixed stop means on the interior of said housing means for defining the limit of travel in the ejection direction and thus the ejected position of at least one of said holder means whereby said driving connection establishing means will define different normal lengths of travel of each of said holder means;

means for resiliently biasing said transport slider means toward the ejected position; and

means for releasably locking said transport slider means in said inserted position in said housing means against the bias of said resilient biasing means.

4,607,895

SALES DISPLAY CASE

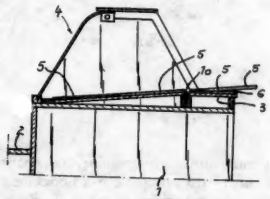
Detlef Hesterberg, Auf dem Rode 29, 5800 Hagen 7, and Dietrich Hesterberg, Lohestr. 9, 5800 Hagen 1, both of Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,489

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 8403748[U]

Int. Cl.[4] A47F *3/14*

U.S. Cl. 312—126 **5 Claims**



1. In a sales display case for goods including baked products and confectionaries comprising a base with a horizontal work table attached to a rear portion of said base and extending across the entire length of the case, a transparent rearwardly open display structure on said base, and a plurality of identical rectangular goods display members positioned on a floor of said display structure so as to be inclined toward the front thereof and each having a length and a width, the improvement wherein:

said table is substantially level and said goods display members positioned on said floor in said display structure have rearwardly directed ends;

said goods display members are detachable and independent;

an upwardly protruding lip is formed on a free rear longitudinal edge of said table;

a spacing is provided between the rearwardly directed ends of said goods display members placed in said display structure and said lip on said table and said spacing is at least equal to the widths and is smaller than the lengths of said goods display members;

said lip has a height at least equal to a thickness of said goods display members;

said lip is movable transversely to said longitudinal edge of said table to provide a limited transverse displacement thereof, whereby the maximum displacement of said lip equals at least a difference between the length and the width of said goods display plates;

said table with said lip is divided into a plurality of work plate segments positionable side-by-side with long sides of said segments parallel to each other; and

each of said work plate segments is rotatable about a pivot at a front end portion proximal to said display structure and has a rear end portion of said work plate segment liftable from the horizontal to a raised position.

4,607,896

LOCK FOR MOBILE STORAGE APPARATUS

Robert J. Peterman, Hartland, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Jan. 30, 1984, Ser. No. 575,216

Int. Cl.[4] A47B *53/02*

U.S. Cl. 312—201 **4 Claims**

1. In combination with a mobile storage system having at least one wheeled mobile storage unit with a face panel and being translatable along a set of tracks, apparatus for selectively locking and unlocking the mobile storage unit at a predetermined location along the tracks comprising:

(a) rack means fastened to a track at the predetermined location of the mobile storage unit;

(b) lock actuating means mounted on the mobile storage unit face panel for selecting a locked or unlocked mode;

(c) a latch retained in the actuating means for reciprocable actuation thereby;

(d) guide block means attached to the mobile storage unit for defining a vertical passage;

(e) a lock bar mounted for vertical reciprocation within the guide block means and adapted to engage the rack means to prevent movement of the mobile storage unit;

(f) cable means for being pulled in a first direction by the latch to positively pull the lock bar out of engagement with the rack means and for being pushed in a second

direction to push the lock bar into engagement with the rack means an abutment on said cable means and secured to said cable means; and

(g) a compression spring arranged around the cable means and having one spring end engaged with said latch and the other spring end engaged with said abutment between the reciprocable latch and said abutment for resiliently pushing the cable means in the second direction to thereby push the lock bar into engagement with the rack means,

so that selective actuation of the lock actuating means to the locked mode reciprocates the latch and compresses the spring to resiliently bias the cable means and lock bar into engagement with the rack means and selecting the lock actuating means to the unlocked mode reciprocates the latch to positively pull the cable means and lock bar out of engagement with the rack means.

4,607,897

VIDEOENDOSCOPIC SUPPORT STAND

C. Bruce Schwartz, 6594 Mill Creek Rd., The Dalles, Oreg. 97058

Filed Jul. 8, 1985, Ser. No. 752,629

Int. Cl.[4] A47B *81/00*

U.S. Cl. 312—209 **9 Claims**

1. A videoendoscopic support stand, comprising:

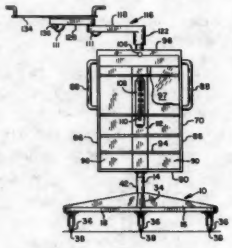
a base defining a support area;

a vertical support column mounted on the base within the support area;

horizontal cabinet support means rigidly secured to the support column;

a cabinet having a base, opposite sides, a front, a top and shelves extending between the sides for supporting equipment for use in performing videoendoscopic medical procedures, the cabinet being pivotally mounted on the cabinet support means, the cabinet being rotatable between a first cabinet position and a second cabinet position to facilitate access by a user to equipment supported in the cabinet; and

television monitor support means including a television monitor support arm pivotally mounted atop the support column for supporting a television monitor in position for viewing by a user performing videoendoscopic medical procedures, the television monitor support arm being rotatable between a first arm position and a second arm



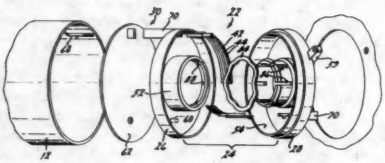
position, the first and second arm positions being on the opposite side of the support column from the first and second cabinet positions, the first and second arm positions and the first and second cabinet positions being selected so that the center of gravity of the stand, the television monitor and the equipment supported in the cabinet lies within the support area of the base.

4,607,898

SPIRAL FLEX-CIRCUIT SYSTEM FOR STEERING WHEELS

Robert P. Reighard, Toledo, Ohio; Samuel D. Kinner, Portland, Ind., and Mark Ciesielski, Maumee, Ohio, assignors to Sheller-Globe Corporation, Toledo, Ohio

Filed Nov. 13, 1984, Ser. No. 670,805
Int. Cl.[4] H01R *35/00*
U.S. Cl. 339—3 S 14 Claims



1. A conductor assembly for conveying electrical signals between a vehicle steering wheel member and steering column member, said wheel member being rotatable with respect to said column member a predetermined number of rotations between clockwise and counter clockwise limits, comprising:

means for defining an enclosure carried on one of said wheel and said column members, said enclosure defining an inner circumferential dimension;

a hub centrally disposed within said enclosure and rotatable with respect to said enclosure defining means and defining an outer circumferential dimension; and

an elongated and flexible ribbon-like cable having at least one conductive course and being disposed within said enclosure, one end of said cable being stationary relative to said enclosure defining means and the other end of said cable being stationary relative to said hub;

said cable having a length generally equal to one half said predetermined number of rotations times said outer circumferential dimension plus the radial spacing between the inner and outer circumferential dimensions;

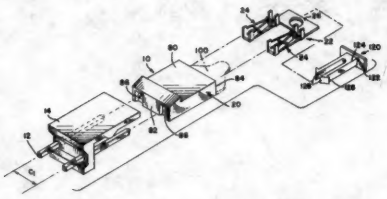
said cable being substantially wound about said hub with a first sense of rotation when said wheel member is rotated to said clockwise limit and said cable being substantially wound about said hub with a second sense of rotation when said wheel member is rotated to said counter clockwise limit.

4,607,899

SHUNT CONNECTOR AND METHOD OF FORMING

Edward L. Romine, Hoffman Estates, and Roger W. Byczek, Westchester, both of Ill., assignors to Bally Midway Mfg. Co., Franklin Park, Ill.

Filed May 30, 1984, Ser. No. 615,138
Int. Cl.[4] H01R *31/08*
U.S. Cl. 339—19 9 Claims



7. A shunt connector for interconnecting spaced conductive pins on a circuit board comprising a nonconductive housing having a pair of spaced openings extending from one end and an elongated opening extending from an opposite end and interconnecting said pair of spaced openings, an electrical conductor in said elongated opening providing electrical contact between a pair of spaced conductive pins received into said pair of spaced openings, said electrical conductor including a connecting strip adjacent an inlet to said elongated opening, a pair of electrical contacts integral with said connecting strip extending into said pair of spaced openings and respectively aligned therewith, each of said electrical contacts including an elongated, generally flat base portion integral at one end with said connecting strip and having an opposite end, a pair of contact beams extending substantially perpendicular from lateral edges of said base portion, each of said contact beams having an integral connection with a lateral edge adjacent said opposite end and a remaining deflectable portion, each of said deflectable portions being deformed intermediate opposite ends to define confronting contact points above said base portions so that insertion of said conductive pins through said spaced openings will deflect said contact beams and make electrical contact with said contact points, legs extending perpendicularly from opposing edges of the base opposite the integral connection end, the legs and the integral connections cooperating to proide a rigid support between the contact terminals, and a cover having a deflectable bifurcated leg with locking edges to close the nonconductive housing to prevent unintentional insertion of conductors.

4,607,900

TELEPHONE JACK SECURITY DEVICES

Joe Andrews; Dolores Andrews, both of 7407 Hobart Blvd., Los Angeles, Calif. 90047, and Beverly Lockett, 1357 Geddes St., Los Angeles, Calif. 90044

Filed May 7, 1984, Ser. No. 607,434
Int. Cl.[4] H01R *13/44*
U.S. Cl. 339—37 3 Claims

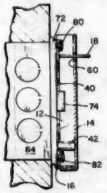
1. A telephone access jack security device for limiting the connection of a telephonic device to an access jack, wherein said access jack is mounted in a fixture having an electrical connector receptacle, a faceplate or the like having attachment studs extending outwardly therefrom and including means for attaching said faceplate to said fixture, said security device comprising:

(a) A baseplate adpated to mount on the front of said faceplate and including an opening therein so as to otherwise

expose said connector receptacle and having slots positioned so as to correspond to said attachment studs of said faceplate, and at least one hold associated with a corresponding one of said slots so as to permit the insertion of a corresponding one of said studs therethrough;

(b) A locking member attached to said baseplate and extending outwardly therefrom;

(c) A coverplate of substantially unitary construction and of suitable dimensions to substantially cover said baseplate when placed in a parallel, overlying relationship therewith, said coverplate having sides so as to permit the formation of a cavity between said baseplate and said coverplate when placed in a parallel, overlying relationship sufficiently sealed to prevent passage of a connector suitable for insertion into said connector receptacle, said coverplate having an opening therein sufficient to permit the close passage of said locking member therethrough when said coverplate and said baseplate are placed in the parallel, overlying relationship with one another; and



(d) Means for hingedly attaching said coverplate to said baseplate so as to permit said coverplate to be placed in a substantially parallel, overlying relationship with said baseplate, the connection points of said hinge means to said coverplate and said baseplate being such as to be substantially within the cavity formed between said coverplate and said baseplate so as to effectively preclude tampering therein.

4,607,901

MOLD FILL WALL FOR SNAP-IN TERMINAL RETENTION

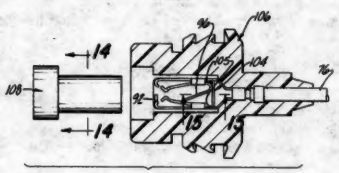
Remie P. Durand, Fraser, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 3, 1985, Ser. No. 752,202

The portion of the term of this patent subsequent to Jun. 3, 2003, has been disclaimed.

Int. Cl.⁴ H01R *11/00*

U.S. Cl. 339—59 L **16 Claims**



1. A snap-in lamp terminal for use in a socket housing for receiving, locating and positioning a wedge-base bulb having a pair of filament extension wires positioned on sides of the wedge base, a pair of troughs extending transverse to the wedge base, the wedge base further having a centrally located cylindrical vent tube and a bulbular evacuated chamber both in the same longitudinal axis, the vent tube bounded by laterally extending side wings of the wedge base, the snap-in terminal comprising:

a lamp receiving portion and a conduit receiving portion;

the conduit receiving portion including wire retention means;

the lamp receiving portion of a generally channelized shape having a terminal base and terminal sides forming the channel;

cantilevered contact arms projecting into the interior of the generally channelized lamp receiving portion from the terminal side via folded tabs;

the contact arms including spring contact members for communication with the detent troughs of the bulb and filament wires of the bulb;

the terminal sides having curved bulb guides at the lamp receiving end to communicate with the wedge-base bulb;

a wire guide means projecting into the interior of the generally channelized lamp receiving portion from one of the terminal sides such that a wiping action will occur when the wedge-base bulb is inserted into the terminal whereby the wire guide means wipes along the vent tube of the bulb thereby straightening any skewed portion of the filament wires; and

the snap-in terminal further comprising a mold fill retention means to prevent unwanted flow of molded socket fill material into the generally channelized lamp receiving portion of the snap-in terminal.

4,607,902

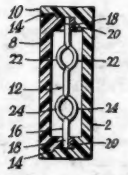
ELECTRIC WIRE CONNECTOR

Thomas J. McKenzie, 6230 N. Camino Pimeria alta, Tucson, Ariz. 86718

Filed Apr. 24, 1985, Ser. No. 726,908

Int. Cl.⁴ H01R *4/48*

U.S. Cl. 339—61 R **10 Claims**



1. An electrical wire connector comprising:

a plurality of similarly formed electrically conductive spring metal wires in a closely aligned arrangement one with another, each wire having portions thereof intemediate its ends designed to cooperate with adjoining similarly formed wires to form at least one elongate channel of substantially the same cross-sectional area throughout its length for receiving conductors to be interconnected;

means spaced from said channel forming portions of said wires and electrically interconnecting their ends and thereby interconnecting said similarly formed wires in permanent assembly; and

a dielectric housing enclosing said assembly and having openings in line with said channel permitting the insertion of said conductors into said channel and thereby be interconnected.

4,607,903
CONNECTOR ASSEMBLY

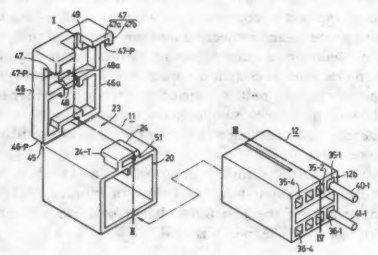
Teruaki Hoshino, Higashiyamato; Isao Iimori, Kunitachi, and Koichi Kamiji, Utsunomiya, all of Japan, assignors to Japan Aviation Electronics Industry Limited and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 29, 1985, Ser. No. 717,789

Claims priority, application Japan, Mar. 30, 1984, 59-64245; Mar. 30, 1984, 59-64246; Mar. 30, 1984, 59-64247

Int. Cl.[4] H01R *13/44*

U.S. Cl. 339—63 R **12 Claims**



1. A connector assembly comprising:

a first connector body of a parallelepiped shape formed of a molded synthetic resin, said first connector body having at least one rectangular hole formed therein and defining an open end face and a closed end face opposite to each other;

contact support means provided at the closed end face of said first connector body;

a plurality of pin contacts mounted on said contact support means to extend in parallel to an axis of said rectangular hole toward the open end face thereof;

a second connector body of a rectangular parallelepiped formed of a molded synthetic resin and dimensioned to be snugly insertable into said rectangular hole of said first connector body, said second connector body having formed therein a plurality of contact housing holes extending therethrough in parallel to the inserting direction of said second connector body to communicate between front and rear faces thereof;

a plurality of socket contacts mounted in said contact housing holes of said second connector body, for resilient engagement with said pin contacts to establish electrical connection therebetween when said second connector body is inserted into said rectangular hole of said first connector body;

a plate-like connector locking member having one end rotatably connected with one edge of said closed end face of said first connectory body via a hinge, said hinge being so positioned that said locking member is adapted to be rotated about said hinge and thereby folded over one of the side faces of said first connector body, a free end of said connector locking member remote from said hinge having an engaging projection formed integrally therewith to extend perpendicularly thereto on the side of an inner face thereof to be overlaid on said one side face of said first connector body for abutting against said rear end face of said second connector body thereby to lock said seocnd connector body to said first connector body and prevent said second connector body from coming out of said first connector body, the length of said connector locking member from said hinge to the nearest edge of said engaging projection defining a depth to which said second connector body is required to be inserted into said first connector body to assure good electrical contact between said pin contacts and said socket contacts; and

first and second engaging means formed on said one side face of said first connector body and said inner face of said connector locking member integrally therwith, respectively, so that when said connector locking member is folded over said one side face, said first and second engaging means are hidden between said connector locking member and a side wall of said first connector body and engage one another to prevent said connector locking member from pivotally departing from said one side face of said first connector body.

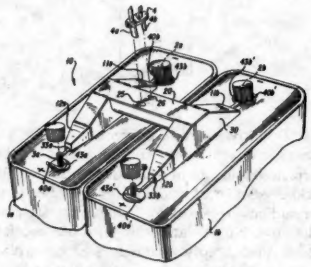
4,607,904
BATTERY TERMINAL CONNECTOR AND HANDLE

Robert D'Alessandro, Bedford Hills; Carlos Cardenas, Hartsdale, and Gordon E. Kaye, Garrison, all of N.Y., assignors to Duracell Inc., Bethel, Conn.

Filed Aug. 27, 1984, Ser. No. 644,406

Int. Cl.[4] H01R *3/00*

U.S. Cl. 339—108 R **6 Claims**



1. A terminal connector for externally interconnecting the terminals of two batteries, said connector comprising at least two separated metallic terminal connecting elements contained within an insulative housing which is adapted to span across said batteries characterized in that said metallic terminal connecting elements are structurally self supportive and wherein each of said metallic terminal connecting elements comprises portions thereof which protrude from said insulative housing for electrical and mechanical connection with said terminals, said insulative housing having an elevated section thereof with said section being elevated from said batteries, when interconnected by said connector, in the area where said housing spans and is directly above said batteries, by a distance sufficient to permit finger insertion between said housing and said batteries whereby said housing may function as a carrying handle for said batteries and wherein said housing embodies means for permitting electrical contact between said metallic terminal connecting elements and an external electrical device.

4,607,905
MODULAR PLUG

James L. Vaden, Black Mountain, N.C., assignor to Brand-Rex Company, Willimantic, Conn.

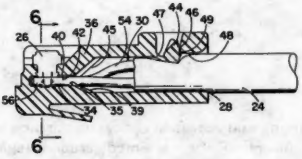
Filed Apr. 18, 1985, Ser. No. 724,513

Int. Cl.[4] H01R *13/50*

U.S. Cl. 339—176 M **4 Claims**

1. A modular electrical connector comprising an elongated dielecting housing defining an elongated generally longitudinally extending first channel terminating at an opening in the rear end of said housing for receiving an electrical cable having a plurality of conductors, said channel having generally opposing floor and ceiling surfaces, the rear portions of said floor and ceiling surfaces being generally parallel to each other, the forward end portions of said floor and ceiling surfaces being inclined to the longitudinal axis of said housing and converging toward each other in the direction of the forward end of said housing, a plurality of generally longitudinally extending lands

projecting from the inclined forward end portions of said floor and ceiling surfaces and defining generally longitudinally extending grooves therebetween, a transversely spaced apart series of longitudinally extending conductor receiving passageways formed in said housing forward of said channel and equal in number to said grooves, each of said passageways being defined by longitudinally extending lands and aligned with and forming forward extensions of an opposing pair of said grooves defined by said inclined forward end portions of said floor and ceiling surfaces, and a transversely spaced apart series of contact receiving openings formed in a forward end portion of



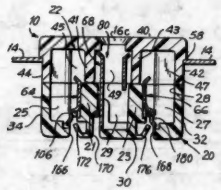
said housing equal in number to said passageways, each of said contact receiving openings communicating with an associated one of said passageway, said inclined forward end portions of said floor and ceiling surfaces comprising means for engaging the leading end portions of the conductors of an associated cable to align each of the leading end portions with an associated one of said conductor receiving passageways before the leading end portions reach said passageways and for guiding the leading end portions into said passageway as the cable is inserted into said housing through said opening in the rear end of said housing.

4,607,906

PANEL-MOUNTED DUPLEX ELECTRICAL RECEPTACLE AND POWER TERMINAL STRIP

Ronald G. Munroe, Staten Island, N.Y., assignor to Eagle Electric Mfg. Co., Inc., Long Island City, N.Y.

Filed Dec. 24, 1984, Ser. No. 685,392
Int. Cl.[4] H01R *33/72*
U.S. Cl. 339—192 R **8 Claims**



1. A panel-mounted electrical receptacle, comprising:

(A) a housing elongated along a longitudinal direction and constituted of an electrically-insulating material, said housing having a support portion and a cover portion connected to the latter in an assembled condition,

(i) said support portion having a generally planar base wall region, and side and end wall regions extending along a transverse direction generally perpendicular to the plane of the base wall region away from the latter and bounding an interior space therewith, said base wall region having a plurality of channels extending from the interior space to the exterior of the support portion, each channel being elongated lengthwise along the entire length of the base wall region, and having a longitudinal opening which faces the exterior of the base wall region and enables insertion along the transverse direction of an elongated conductor into a respective channel,

(ii) said cover portion having a generally planar top wall region in a generally mutual parallelism with the base wall region in the assembled condition, and side and end wall regions extending along a transverse direction generally perpendicular to the plane of said top wall region, the side and end wall regions of said support portion and said cover portion abutting one another to form an enclosed chamber which includes said interior space, said top wall region having an electrical outlet extending from said enclosed chamber to the exterior of the cover portion;

(B) a hot power, a neutral power and a ground contact strip, each constituted of an electrically-conducting material and elongated along said longitudinal direction, said contact strips being mounted entirely in the support portion and spaced transversely apart from one another, each contact strip having a double wipe socket for electromechanically receiving a respective prong of an electrical plug inserted in the electrical outlet, each contact strip also having a transversely-extending terminal extending through a respective channel of the base wall region and past the latter, to the exterior of said receptacle, each of said terminals being adapted to be inserted into the socket of another electrical receptacle, each contact strip having a body portion, and a resilient tongue having a conductor-receiving groove within and in communication with a respective channel, each tongue being deflectable away from the body portion during insertion of a respective conductor into a respective channel and into a respective groove and being returnable, due to its inherent resilience, toward the body portion to press the respective conductor into electromechanical contact with the latter; and

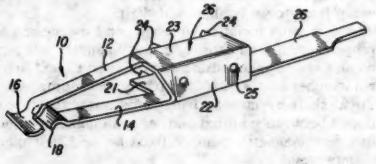
(C) means on the housing for mounting the latter with a snap action in a cutout formed in a panel, said mounting means having spaced-apart legs movable from an undeflected position to a deflected position in which the legs snappingly engage the panel about the cutout.

4,607,907

ELECTRICAL CONNECTOR REQUIRING LOW MATING FORCE

Robert Bogursky, Easton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Aug. 24, 1984, Ser. No. 644,044
Int. Cl.[4] H01R *13/11*
U.S. Cl. 339—258 P **19 Claims**



1. An electrical conductor contact for mating with a mating contact by accepting insertion of said mating contact, comprising:

an upper cantilever finger having a contact portion at its free end; and

a lower cantilever finger having a contact portion at its free end,

wherein said upper and lower cantilever fingers are in opposed relationship one to the other,

said upper and lower cantilever fingers being electrically connected on their rigid ends,

said contact portions being at least partially offset axially from each other in the longitudinal direction of insertion of said mating contact, at least partially offset axially from each other relative to the axis vertically perpendicular to the longitudinal direction of insertion of said mating contact, and partially offset axially from

each other relative to the axis horizontally perpendicular to the longitudinal direction of insertion of said mating contact, and

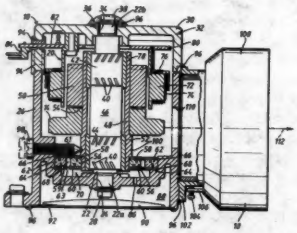
at least a portion of the surface of the contacting portion of said lower cantilever finger is located above a portion of the surface of the contacting portion of said upper cantilever finger relative to the plane of insertion of said mating contact.

4,607,908

OPTICAL DEFLECTOR

Takao Ishida, Kawasaki, and Yoshitsugu Nakatomi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 20, 1985, Ser. No. 735,984
Claims priority, application Japan, May 21, 1984, 59-102030
Int. Cl.[4] G02B 26/10
U.S. Cl. 350—6.8 10 Claims



9. An optical deflector with a polygonal mirror for deflecting a light beam comprising:

a housing;

a fixed shaft fixed to said housing and having two end portions;

a cylindrical shaft, rotatably and coaxially overlapped on said fixed shaft in said housing, for supporting and rotating the polygonal mirror so that a light beam reflected by the polygonal mirror is deflected within a certain spread angle;

a pair of bearings, fixed to both end portions of said fixed shaft, for rotatably supporting said cylindrical shaft;

a first magnet member with a first magnetic pole arrangement, fixed to said cylindrical shaft;

a second magnet member with a second magnetic pole arrangement different from said first magnetic pole arrangement, fixed to said housing and opposed to said first magnet member across a gap, for axially suspending said cylindrical shaft by means of magnetic attractive force produced between said first and second magnet members;

a first ferromagnetic member fixed on said first magnetic member; and

a second ferromagnetic member, fixed on said second magnetic member, for preventing magnetic lines of force produced between said first and second magnet members from diverging, cooperating with said first ferromagnetic member.

4,607,909

METHOD FOR MODULATING A CARRIER WAVE

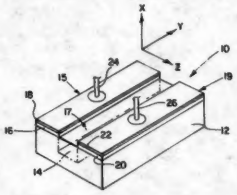
Norman A. Sanford, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 14, 1984, Ser. No. 620,619
Int. Cl.[4] G02B 6/10
U.S. Cl. 350—96.14 6 Claims

1. A method for modulating electromagnetic carrier waves in the optical region of the spectrum comprising the steps of:

propagating the carrier wave through a ferroelectric waveguide as a plurality of modes copolarized in one azimuth such that the optical power emerging from the waveguide in the near field is spatially distributed in a predetermined pattern containing spatially separated intensity peaks;

selectively changing said optical power distribution pattern in correspondence with an information signal by interfering and cross coupling energy between said modes; and



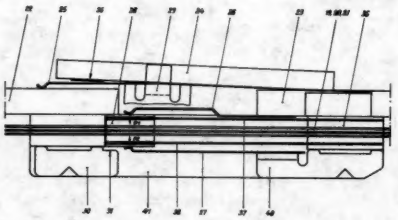
spatially filtering said near field optical distribution pattern so that only the optical power in a predetermined region of said pattern is transmitted beyond the point of spatial filtering to provide an optical carrier wave whose intensity is modulated in correspondence with the information signal.

4,607,910

OPTICAL FIBER SWITCH HAVING A MOVABLE FIBER SECURED TO A SLIDE WHICH IS INDIRECTLY MOVED BY A MAGNETIC ARMATURE

Ake G. H. Thurenius, Skärholmen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE84/00308, § 371 Date May 22, 1985, § 102(e) Date May 22, 1985, PCT Pub. No. WO85/01803, PCT Pub. Date Apr. 25, 1985
PCT Filed Sep. 25, 1984, Ser. No. 740,266
Claims priority, application Sweden, Oct. 14, 1983, 8305653
Int. Cl.[4] G02B 6/36
U.S. Cl. 350—96.20 8 Claims

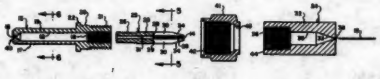


1. An optical fiber switch comprising a fixed holder, at least one fixedly mounted fiber on said holder, a slide, at least one movable fiber secured to said slide in facing relation to said fixedly mounted fiber, first and second abutments between which said slide is movable, and means including a magnetically activated armature for displacing said slide to selectively and controllably couple and uncouple said fibers optically, said means including a rigidly clamped first spring acting on said slide to displace the slide from said first abutment to said second abutment, a second spring action on said slide in opposition to said first spring, said second spring being stronger than said first spring, and means rigidly mounted on said armature for diminishing the action of said second spring on said slide, upon activation of said armature, so that said slide is displaced to said second abutment substantially only under the action of said first spring.

4,607,911
CONNECTOR FOR AN OPTICAL FIBER HAVING A STATIONARY CLAMP ENGAGED AND OPERATED BY A ROTATABLE MEMBER

Geoffrey M. Rhodes, Orchard Park, N.Y., assignor to Conax Buffalo Corporation, Buffalo, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,191
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 **5 Claims**

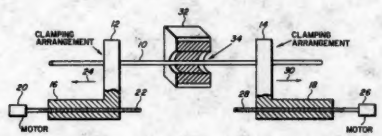


1. An optical fiber connector, comprising:
an elongated tubular body member having a passage extending longitudinally therethrough from end to end and in which an optical fiber can be arranged so as to be flush with the end face at one end of said body member,
a metallic clamp member fast to said body member at the other end thereof so as to be stationary with respect to said body member and defining a constrictive opening, and
a rigid clamp operating member rotatably engaging said clamp member and movable relative to said body member in a direction axially of said passage for causing said clamp member to constrict said opening, whereby an optical fiber which extends through said opening is mountable on said body member.

4,607,912
IN-LINE OPTICAL FIBER POLARIZER

William K. Burns, Alexandria, and Carl A. Villarruel, Burke, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1983, Ser. No. 558,744
Int. Cl.[4] G02B *6/18, 6/00*
U.S. Cl. 350—96.30 **15 Claims**



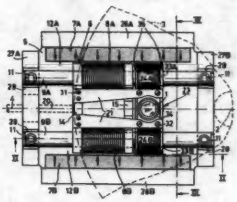
1. An in-line integrated optical fiber polarizer comprising:
a length of polarization holding optical fiber; and
a first small portion on the order of 1 cm or less of said length of polarization-holding optical fiber having a thermally-tapered reduced core diameter for effecting polarization of light signals propagating within said length of optical fiber.

4,607,913
ELECTRODYNAMIC DEVICE FOR TRANSLATING A LENS SYSTEM

Gerardus L. M. Jansen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 483,804, Apr. 11, 1983, Pat. No. 4,504,935. This application Feb. 7, 1984, Ser. No. 578,382
Claims priority, application Netherlands, Feb. 14, 1983, 8300540
The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.
Int. Cl.[4] G02B *7/11*
U.S. Cl. 350—247 **3 Claims**

1. An apparatus for recording and/or reading information on an optically readable disc, (3), which apparatus comprises:
a frame, (5),
a carrier (6) which is movable relative to the frame along a first axis, (4),
first electrodynamic drive means (5, 7, 8, 9) for driving the carrier along the first axis,
a lens system (1) which is arranged on the carrier and which is movable relative thereto along a second axis (18) perpendicular to the first axis,

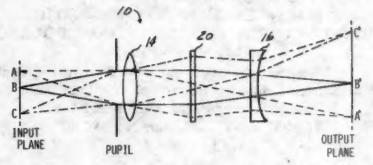


second electrodynamic drive means (5, 7, 9, 24) for driving the lens system along the second axis, and
a lens-system supporting arrangement comprising supporting means (21, 22, 31, 32) arranged between the carrier (6) and the lens system, characterized in that there are provided third drive means (33) for subjecting the lens system (1) directly, i.e. not via the supporting means (21, 22, 31, 32), to forces acting along the first axis (4) of the carrier (6).

4,607,914
OPTICAL SYSTEM DESIGN TECHNIQUES USING HOLOGRAPHIC OPTICAL ELEMENT

James R. Fienup, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Oct. 12, 1983, Ser. No. 541,267
Int. Cl.[4] G03H *1/08*
U.S. Cl. 350—320 **2 Claims**



1. A method of making an optical system, for which a weighted mean square or root mean squared merit function has been defined, said system having an output plane, said method comprising:
including at least one holographic optical element (HOE) in the system, said HOE being positioned in the system so that is it illuminated from a plurality of field angles and having optimum phase transfer characteristics defined by the steps of:
(a) determining the phase transfer function for a first idealized HOE for transforming a wavefront intersecting the HOE from a first field angle to a first desired wavefront in the output plane of the optical system;
(b) storing the phase transfer function for the first idealized HOE in a memory;
(c) determining the phase transfer function of a plurality of other idealized HOE's for transforming wavefronts from other field angles to other desired wavefronts in the output plane;
(d) storing the phase transfer functions for the other idealized HOE's in the memory;

(e) taking the weighted average of the stored phase transfer functions of the idealized HOEs to generate an optimum phase function for the HOE that will minimize the merit function of the optical system;

(f) forming fringe patterns in a holographic recording material to produce the HOE having the optimum phase transfer function characteristics; and

(g) assembling the optical system including the HOE.

4,607,915

LIGHT ABSORBERS

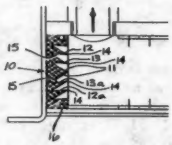
Martin T. Cole, 29 Stafford St., Huntingdale, Victoria, Australia

Filed Aug. 13, 1984, Ser. No. 640,351

Claims priority, application Australia, Aug. 12, 1983, PG0821

Int. Cl.⁴ G02B *00/00*

U.S. Cl. 350—321 **11 Claims**



1. A light absorber comprising a body at one side of which is a face having a center encircled by an annular groove having a base and opposed, radially inner and outer walls, said walls of said groove being so inclined relatively to one another that the radially inner wall forms a conical surface extending from said center inwardly from said face.

4,607,916

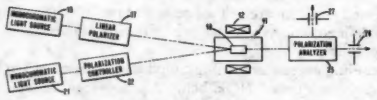
APPARATUS FOR CONTROLLING THE ROTATION OF THE PLANE OF LINEAR POLARIZATION OF LINEARLY POLARIZED RADIANT ENERGY TRAVERSING AN ELEMENT OF CHROMIUM CHALCOGENIDE SPINEL MAGNETIC SEMICONDUCTOR WITH ELLIPTICALLY POLARIZED RADIANT ENERGY

Norman A. Sanford, Arlington; William J. Miniscalco, Sudbury, and Alexander Lempicki, Boston, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 19, 1984, Ser. No. 590,807

Int. Cl.⁴ G02F *1/09*

U.S. Cl. 350—376 **13 Claims**



1. Optical control apparatus comprising

a first source for producing a primary beam of linearly polarized radiant energy;

a second source for producing a control beam of elliptically polarized radiant energy;

an element of chromium chalcogenide spinel magnetic semiconductor;

the primary beam of linearly polarized radiant energy and the control beam of elliptically polarized radiant energy being directed at the element of chromium chalcogenide spinel magnetic semiconductor to traverse the element generally along the same path;

cooling means for maintaining the temperature of said element of chromium chalcogenide spinel magnetic semiconductor below its Curie temperature;

magnetic means for producing a magnetic field parallel to said path and magnetically saturating said element of chromium chalcogenide spinel magnetic semiconductor in the ferromagnetic phase to ensure a single magnetic domain therein;

the control beam of elliptically polarized radiant energy interacting with the element thereby changing the effect of the element on the primary beam of linearly polarized radiant energy to rotate the plane of linear polarization of the primary beam in accordance with the state of elliptical polarization of the control beam; and

output means for receiving the primary beam of radiant energy from the element of chromium chalcogenide spinel magnetic semiconductor, said output means being operable to permit passage therethrough of the components of a linearly polarized beam of radiant energy lying in a plane parallel to a reference plane.

4,607,917

ELECTRO-OPTICAL DEVICE

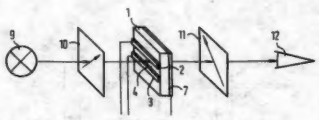
Heinz Ebner, Ditzingen; Gabriele I. Koch, Stuttgart; Joachim Lauckner, Korntal; Felix Lutz, Stuttgart; Gerhard Seibold, Remseck, and Gerhard Wessel, Stuttgart, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 19, 1983, Ser. No. 486,574

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214584

Int. Cl.⁴ G02F *1/07*

U.S. Cl. 350—392 **5 Claims**



1. In an electro-optical device comprising an electrically controllable electro-optical substrate made from a transparent electro-optical material exhibiting an optical effect controllable by applying a voltage between first and second control electrodes arranged proximate to each other on a first side of said substrate to thereby define a plurality of areas of the substrate to be controlled:

an additional electrode lying on a second side of said substrate and adjacent to said plurality of areas, said additional electrode defining a window-like opening for each of said areas, with said areas and corresponding window-like openings arranged in two rows that are staggered with respect to each other and wherein the projection of one of said rows of openings on the other in overlapping relationship defines a continuous region;

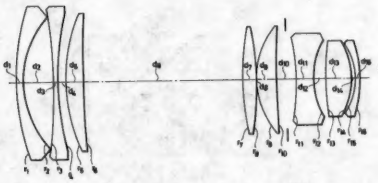
said first electrode being strip shaped and disposed between said two rows, and said second electrode being one of a plurality of second electrodes spaced from one another along each of two rows that lie on opposite sides of said center electrode; and

a plurality of terminal contacts, each connected to one of said second electrode portions and extending outwardly in relation to said first side of said substrate, said terminal contacts being arranged in a stepwise fashion.

4,607,918
ZOOM LENS SYSTEM

Yasuzi Ogata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1984, Ser. No. 572,452
Claims priority, application Japan, Feb. 2, 1983, 58-14602
Int. Cl.[4] G02B *15/177, 15/14*
U.S. Cl. 350—426 8 Claims



1. A large relative aperture zoom lens system comprising a front lens group having negative refractive power and a rear lens group having positive refractive power and so designed as to change magnification level by varying an airspace reserved between said front and rear lens groups, wherein said rear lens group comprises, in the sequence from the object side, at least two positive lens components, a negative lens component having a surface with a small radius of curvature on the image side, a positive lens component and a negative meniscus lens component arranged on the extreme image side therein and having a surface with a small radius of curvature on the object side, a stop being arranged before said negative lens component arranged on the object side and the object side surface of said negative lens component arranged on the extreme image side being designed as a spherical surface whose center of curvature is located in the vicinity of said stop, said larger relative aperture zoom lens system satisfying the following condition (1):

$$0.75 < |\phi_a| \cdot f_R < 1.0 \quad (1)$$

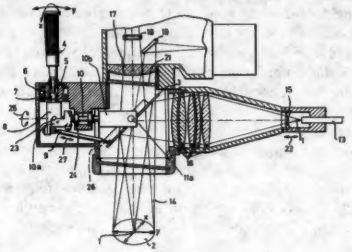
where the reference sumbol ϕ_a represents power of the image side surface of the negative lens component arranged on the object side in said rear lens group, and the reference symbol f_R denotes focal length of said rear lens group.

4,607,919
MANIPULATOR FOR USE WITH A SURGICAL MICROSCOPE

Hartmut Gartner, Oberkochen; Klaus Biber, Aalen, and Peter Greve, Essingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Sep. 26, 1984, Ser. No. 654,861
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1983, 3336519
Int. Cl.[4] G02B *21/00*
U.S. Cl. 350—507 11 Claims

1. An optical beam manipulator for selectively deflecting a light beam over an operating area, said manipulator comprising a mirror, mounting means for said mirror comprising an axially retained member that is rotatable about a first rotary axis, said mirror having pivotal connection to one end of said axially retained member on a first pivot axis transverse to said first rotary axis; an actuating lever including a spherical formation mounted universally for two degrees of angular freedom for said lever about a fixed center of manipulation, said fixed center being at offset from said first rotary axis and said spherical formation having a cylindrical guide bore on an axis through said fixed center, a motion pick-off lever of variable length fulcrum-connected to the other end of said axially retained member on a second pivot axis that is parallel to said first pivot axis, a link member connecting a part of said pick-off lever to a part of said mirror and completing a four-bar linkage which includes said mirror, said axially retained member, and



said motion pick-off lever; and a motion pick-off connection for said motion pick-off lever and including a spherical formation guided in said bore.

4,607,920
CANADA BALSAM WAFERS

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

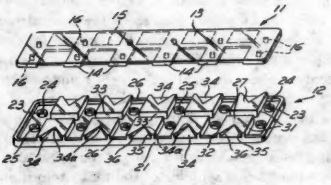
Filed Feb. 6, 1985, Ser. No. 698,662
Int. Cl.[4] G02B *21/34*
U.S. Cl. 350—536 1 Claim

1. A Canada balsam wafer comprising a thin circular solid disk of Canade balsam, said disk having a prescribed diameter to permit insertion of said disk inside a recessed compartment of a microscopic slide, said disk being of a predetermined volume to cover a mineral specimen embedded therein while molten.

4,607,921
WET MOUNT MICROSCOPIC EXAMINATION SLIDE II

Irvin E. Mifler, Homewood, Ill., assignor to V-Tech, Inc., Corona, Calif.

Continuation-in-part of Ser. No. 420,270, Sep. 20, 1982. This application Sep. 7, 1983, Ser. No. 529,142
Int. Cl.[4] G01N *21/01*; G02B *21/34*
U.S. Cl. 350—536 20 Claims



1. A dual member transparent laboratory slide consisting of:

a base member having a bottom wall with an upper surface, said base member being integrally formed with at least one plate surface spaced above said upper surface, a fluid receiving surface communicating with said plate surface, and a first interconnecting means;

a cover member formed with at least one cover slip having a lower surface adapted to be located in spaced confronting parallel relationship with respect to said plate surface,

said cover member being integrally formed with second interconnecting means complementary with said first interconnecting means, said first and second interconnecting means being adapted to removably attach said cover member to said base member; and

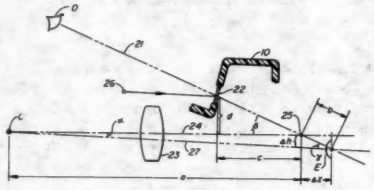
said first and second interconnecting means being adapted to be shaped and configured to selectively provide a predetermined spacing between said plate surface and said cover slip to thereby form a capillary chamber therebetween of selectably predetermined spacing, and also providing substantially rigid positioning of said cover slip and plate surface against lateral movement, said capillary chamber being open on all sides and wherein said cover slip covers only a portion of said fluid receiving surface where it communicates with said plate surface.

4,607,922

METHOD FOR ALIGNING AN EYE EXAMINATION INSTRUMENT WITH THE EYE UNDER EXAMINATION

William E. Humphrey, San Leandro, Calif., assignor to Humphrey Instruments Incorporated, San Leandro, Calif.

Filed Apr. 9, 1984, Ser. No. 598,143
Int. Cl.[4] G03B *29/00*; A61B *3/14*
U.S. Cl. 351—208 **1 Claim**



1. A method of aligning an eye with an eye examination instrument, said instrument including an optical train for examining an eye, said optical train defining an instrument optical axis, a photosensor for indicating a lateral alignment of said eye with respect to said instrument optical axis, a first motor coupled to said optical train for effecting lateral movement with respect to a plane, said first motor responsive to output of said photosensor to effect lateral alignment of said eye with respect to said instrument optical axis, a second motor coupled to said optical train for effecting change of the optical path length thereof, and sight means for use by an operator for determining when the eye under examination is initially aligned with said instrument optical axis, said sight means intersecting said instrument optical axis within said plane so as to be common to both the line of sight of said sight means and the instrument optical axis, said method comprising the steps of:

sighting through said sight means at the eye under examination and bringing said line of sight into a position of initial lateral alignment with said eye;

activating said first motor so as to laterally align said eye with said instrument optical axis whereby said instrument undergoes a vertical displacement Δh at said eye; and

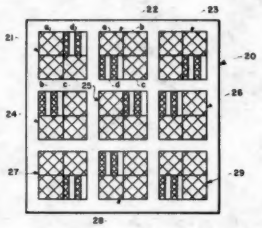
activating said second motor so as to effect a change in said optical path length by an amount Δz, where the amount Δz is substantially equal to $\Delta h \cot \beta$, in which β is the angle between the line of sight of said operator through said sight means and said instrument optical axis, whereby said eye is initially axially aligned by said instrument.

4,607,923

CONTRAST SENSITIVITY FUNCTION MEASUREMENT CHART AND METHOD

Harry L. Task, 275 Main St. Apt. 411 Whitney Towers, Watertown, Mass. 02172, and Louis V. Genco, 2010 Shadow Cliff, San Antonio, Tex. 78232

Filed Jan. 10, 1985, Ser. No. 690,214
Int. Cl.[4] A61B *3/02*
U.S. Cl. 351—239 **12 Claims**



1. A device for measuring the contrast sensitivity function in the vision system of a subject, comprising:

a. a chart for viewing by said subject, said chart having a first plurality of visual test patches systematically organized thereover in a predetermined first array; and

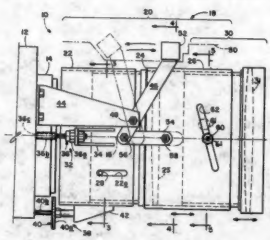
b. each said patch comprising a second plurality of adjacent patterned areas, at least one of which comprises a pattern of alternate light and dark regions of predetermined contrast, and the remaining patterned areas comprising solid gray patterns of a predetermined reflectance value, said pattern of light and dark regions being characterized by an average reflectance averaged thereover equal to said predetermined reflectance value of said gray patterned areas.

4,607,924

VIDEO PROJECTOR FOCUS ADJUSTMENT MECHANISM

Dennis W. Vance, Portola Valley, Calif., assignor to Vivid Systems Incorporated, Fremont, Calif.

Filed Dec. 4, 1984, Ser. No. 678,035
Int. Cl.[4] G03B *3/00*
U.S. Cl. 353—101 **8 Claims**



1. A focus adjustment mechanism for use on a projector, the projector having a frame and projection lens, the projection lens having first and second focusing elements, wherein the mechanism comprises:

first focusing means for longitudinally and nonrotatably focusing the first focusing element;

second focusing means for rotatably focusing the second focusing element; and

retaining means for retaining said first focusing element nonrotatably on the frame, wherein said first focusing

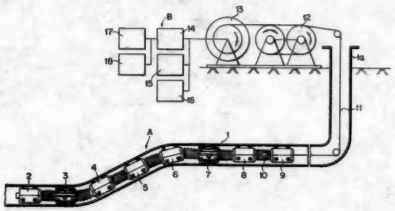
element includes a lens carrying portion slidably received on said retaining means, said first focusing means including a bracket affixed to the frame, and a lever pivotably mounted on said bracket and attached to said lens carrying portion, operable to longitudinally slide said lens carrying portion relative said retaining means.

4,607,925

IN-PIPE INSPECTION SYSTEM

Hideyuki Kamigaichi, Yokohama; Kazuto Kurachi, Chigasaki; Nobuyoshi Asano, and Tatsuo Hanada, both of Yokohama, all of Japan, assignors to Adek Corporation, Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,095
Claims priority, application Japan, Dec. 28, 1983, 58-248292
Int. Cl.[4] G03B *37/00*; H04N *7/18*
U.S. Cl. 354—63 **3 Claims**



1. An in-pipe inspection system comprising:
a train of cars including a camera car, a drive car, a solenoid valve car, a hydraulic pump car, an oil tank car and a slip ring car, said train being adapted to travel in a pipe laid on the ground, underground or under water, and having at least one open end;
said drive car including drive wheels driven by a hydraulic motor and push wheels pressed by a hydraulic cylinder against the internal wall of the pipe;
said solenoid valve car carrying solenoid valves for controlling said hydraulic motor and hydraulic cylinder;
said hydraulic pump car carrying a hydraulic pump for the hydraulic motor and hydraulic cylinder;
said slip ring car being located at the end of said train;
a cable connected to said slip ring car and composed of a centrally disposed tension member, and power lines and optical fiber means surrounding said tension member;
outside equipment installed outside the pipe including control means for controlling said train of cars, said outside equipment being coupled with said cable; and
means provided outside the pipe and between said train of cars and said outside equipment, for selectively feeding or retracting said cable through said pipe open end.

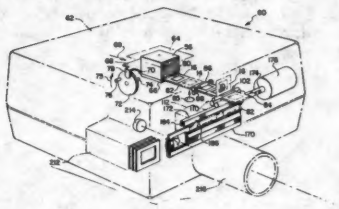
4,607,926

APPARATUS FOR PROCESSING AND/OR PROJECTING TRANSPARENCY FILM ASSEMBLAGES

Peter K. Fichter, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 1, 1985, Ser. No. 718,642
Int. Cl.[4] G03B *17/52*
U.S. Cl. 354—78 **10 Claims**

1. Apparatus for processing a transparency film assemblage of the type comprising a film mount having first and second apertured sections through which light may be transmitted so as to project an image, an unexposed transparency film frame secured to the first section, a rupturable container of processing liquid, and a strip sheet located in superposed relation to the film frame so as to assist in the spreading of the processing liquid between the strip sheet and a major surface of the film frame and in the removal of the film frame's emulsion layer, said apparatus comprising:
means for supporting a transparency film assemblage in position for the photographic exposure of a film frame carried by the first apertured section of a film mount;
means for advancing the transparency film assemblage, subsequent to its exposure, from said supporting means to a rupturing means;
means for rupturing a container of processing liquid and spreading the processing liquid between the film frame and a strip sheet, subsequent to the exposure of the film frame, to initiate the formation of a visible image therein while simultaneously advancing the transparency film assemblage toward a stripping means;



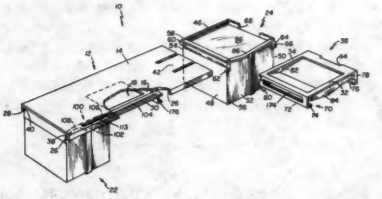
means for stripping the strip sheet and the film frames' emulsion layer from the area of the film frame to be projected, subsequent to the formation of a visible image within the film frame; and
means for folding a second apertured section of the film mount into superposed relation with the first apertured section and securing it thereto such that the film frame is sandwiched therebetween with its image in alignment with the aperture in each section of the film mount.

4,607,927

PHOTOGRAPHIC FILM ASSEMBLAGE HAVING PREMOUNTED FILM FRAMES

John B. Morse, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 4, 1985, Ser. No. 772,555
Int. Cl.[4] G03B *17/26, 17/50*
U.S. Cl. 354—182 **10 Claims**



1. A photographic film assemblage for use with a photographic apparatus, said assemblage comprising:
means for supporting a film frame in position for exposure, said supporting means including first and second opposite ends;
means for defining a supply chamber at said first end of said supporting means;
means for defining a storage chamber at said second end of said supporting means;
a plurality of premounted film frames of the self-developing type mounted in a stack within said supply chamber;
means for urging said stack in a direction which locates one of said premounted film frames in position to be advanced from said supply chamber to said supporting means;
means for sequentially advancing said premounted film frames from said supply chamber to said supporting means

and, subsequent to their photographic exposure, from said supporting means to said storage chamber; and

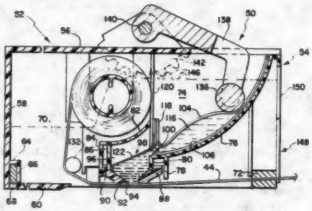
said supporting means and said storage chamber further include means for detachably coupling said storage chamber to said supporting means, whereby said storage chamber may be detached from said supporting means and placed within a film processor for the processing of any exposed premounted film frames located within said storage chamber.

4,607,928

PLIANT SHIELD FOR PROTECTING PHOTOGRAPHIC PROCESSING LIQUID FROM AMBIENT ATMOSPHERE

Robert J. Nangeroni, No. Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 3, 1985, Ser. No. 740,587
Int. Cl.[4] G03D *5/02, 5/06*
U.S. Cl. 354—304 **14 Claims**



1. Apparatus for use in directing a flow of processing liquid to a coating nozzle during a photographic film processing operation, said apparatus comprising;

a housing;

means for defining a reservoir within said housing, said reservoir including an ingress and an egress having a coating nozzle therein;

a container of processing liquid having an end through which the processing liquid is adapted to be expelled;

means for supporting said container within said housing with said end of said container positioned to direct the processing liquid into said reservoir via said ingress; and

means for shielding the surface of the processing liquid from the ambient atmosphere as the processing liquid moves into and out of said reservoir, said shielding means being formed from a pliant material which substantially conforms to the surface of the processing liquid and follows the same as the level of the processing liquid within said reservoir changes.

4,607,929

SELF PURGING PROCESSING LIQUID APPLICATOR

John B. Morse, Boston, and Joseph H. Wright, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 28, 1984, Ser. No. 675,858
Int. Cl.[4] G03D *5/06*
U.S. Cl. 354—318 **8 Claims**

1. Apparatus for applying a layer of photographic processing liquid to a length of flexible sheet material, said apparatus comprising:

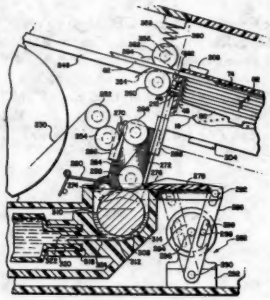
a housing including means for defining a reservoir for holding a quantity of photographic processing liquid, said reservoir including an egress for permanently draining from the surface of the processing liquid in said reservoir a portion thereof, and an ingress located at a lower level than said egress for directing fresh photographic processing liquid into said reservoir;

means for applying a layer of photographic processing liquid to the length of sheet material;

means within said housing defining a chamber for receiving a container of photographic processing liquid;

a container of photographic processing liquid;

means for interconnecting said container with said ingress in said reservoir to enable the flow of said photographic processing liquid into said reservoir; and



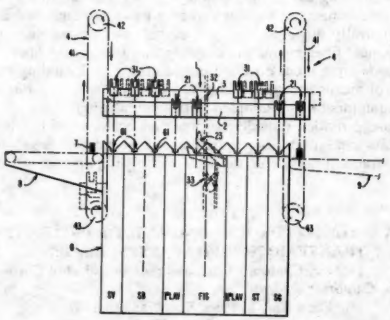
means for periodically moving portions of said photographic processing liquid from said container to said reservoir via said ingress until the level of said processing liquid in said reservoir exceeds the level of said egress, whereby photographic processing liquid located above said egress may permanently exit from said reservoir thus purging said photographic processing liquid located in said reservoir.

4,607,930

DEVICE FOR TRANSFERRING THE FILM HOLDERS IN A FILM DEVELOPER

Silvano Castellarin, Pordenone, Italy, assignor to Gretag San Marco S.p.A., Pordenone, Italy

Filed Jan. 3, 1985, Ser. No. 688,500
Claims priority, application Italy, Jan. 3, 1984, 45702 A/84
Int. Cl.[4] G03D *3/08*
U.S. Cl. 354—322 **6 Claims**



1. A device for transferring film holders in a film developer having a film holder transfer arm mounted between a pair of vertical endless conveyor chains, each of which is mounted for rotation on either side of a group of successive tanks containing various chemical baths for developing film hanging from the film holders, a feeder located adjacent the entrance end of the group of tanks and a conveyor located adjacent the exit end of the group of tanks, the transfer device comprising:

a transfer arm having a first rod extending in a longitudinal direction and adapted to be attached to the vertical endless chains of the film developer for movement therewith

and a second rod slidable in said longitudinal direction along said first rod;

fork means, disposed along said first and second rods, for engaging and transferring film holders from the feeder into recesses along the upper edges of successive tanks and finally onto the conveyor of the film developer;

means for moving said second rod to a first position at which all of said fork means are operable to engage and transfer a respective film holder to a successive position along the film developer and to a second position at which said fork means on said first rod remain operable to transfer respective film holders and said fork means on said second rod are inoperable to engage the transfer any film holders, whereby said fork means disposed on said first and second rods effect transfer of film hanging from film holders through the various stages of film development within time periods close to minimum required time periods at each stage of the development process.

4,607,931

EXPOSURE CONTROL CIRCUIT FOR A CAMERA HAVING A LOAD CIRCUIT

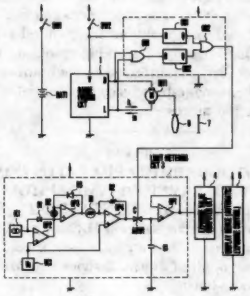
Yoshihiko Aihara, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,545

Claims priority, application Japan, Dec. 2, 1983, 58-228684; Dec. 2, 1983, 58-228685

Int. Cl.[4] G03B *7/08*

U.S. Cl. 354—400 **11 Claims**



1. A camera system having an electric motor for driving a load member, comprising:

(a) a light metering circuit;

(b) an exposure control circuit for controlling exposure in accordance with the output of said light metering circuit;

(c) an electrical power supply circuit for supplying electrical power to said light metering circuit and said motor from a common battery; and

(d) prohibiting means for stopping the transfer of the output of said light metering circuit to said exposure control circuit for a prescribed time when current is supplied to said motor.

4,607,932

BATTERY CHECKING DEVICE

Akira Egawa; Takanori Kodaira, both of Tokyo, and Akihiro Namai, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1985, Ser. No. 727,581

Claims priority, application Japan, Apr. 28, 1984, 59-86891

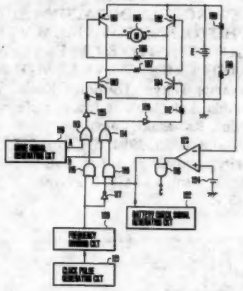
Int. Cl.[4] G03B *17/18*; G08B *21/00*

U.S. Cl. 354—468 **6 Claims**

1. A battery checking device comprising:

(a) a pulse generating circuit for producing pulses with such a frequency that a load does not operate in response thereto;

(b) a control circuit capable of supplying current to the load in both directions, said control circuit responsive to a positive pulse supplying current to the load in one direction, and responsive to negative pulse supplying current to the load in the opposite direction; and



(c) a checking circuit for detecting the voltage level of an electrical power source as applied across the load when the aforesaid pulse appears at the control circuit,

said checking circuit producing a warning signal when the voltage of the electrical power source falls below a prescribed level.

3. A device according to claim 1, wherein said load is a rotor of an electromagnetically operated shutter.

4,607,933

METHOD OF DEVELOPING IMAGES AND IMAGE RECORDING APPARATUS UTILIZING SUCH METHOD

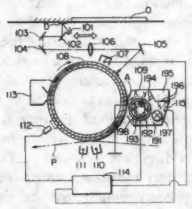
Satoshi Haneda, and Seiichi Hiratsuka, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,329

Claims priority, application Japan, Jul. 14, 1983, 58-128895; May 8, 1984, 59-90284

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—3 DD **14 Claims**



1. An image forming apparatus for developing an electrostatic latent image on a photreceptor by flying toner particles held in a layer of developer through a space existing between the layer and the photoreceptor at a developing area comprising a conveying means for conveying the developer to the developing area, said conveying means comprising a magnetic means for generating magnetic force to support the developer on a surface of the conveying means, a detecting means for detecting a toner concentration, an adjusting means for adjusting at least one of the developing conditions in response to the detected toner concentration, a means for supplying the developer to the conveying means at a supplying position, whereby the developer supplied by said means is conveyed to the devel-

oping area through a removing area where the excessive toner particles are removed from the developer under the influence of gravity, and a regulating means for regulating the thickness of the layer, said regulating means being arranged at a regulating position between the developing position and the supplying position.

4,607,934

ELECTROPHOTOGRAPHY USING A PHOTOSENSITIVE DRUM WITH MULTI-PHOTOSENSITIVE LAYERS SENSITIVE TO DIFFERENT WAVE LENGTHS

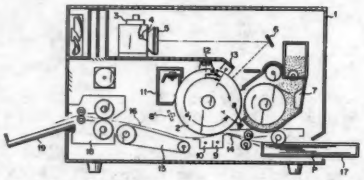
Mitsuaki Kohyama, Tokyo; Toshihiro Kasai, Yokohama, and Haruhiko Ishida, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 28, 1984, Ser. No. 625,790

Claims priority, application Japan, Jul. 5, 1983, 58-121777

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—3 R **12 Claims**



1. An electrophotographic device comprising:

a photosensitive body movable in a path along a first direction and provided with plural photosensitive layers having different spectral sensitivities;

exposure means, arranged facing said photosensitive body, for exposing said photosensitive body as it moves, said exposure means including a plurality of exposure units having spectro-radiation characteristics which correspond to the spectral sensitivity of said photosensitive layers, respectively, said exposure units being located at different positions along said path and facing said photosensitive body, said exposure units including a first exposure means and a second exposure means, said second exposure means for producing an emission in a second range of wavelengths, said first exposure means for producing an emission having a first range of wavelengths generally longer than said second range of wavelengths produced by said second exposure means; and

charging means arranged facing said photosensitive body for charging said body, wherein:

said first exposure means is located at a position separated by a first predetermined distance from that portion of said photosensitive layers which the charging means is facing, in a direction opposite said first direction, and

said second exposure means is located at a position separated by a second predetermined distance, shorter than said first predetermined distance, from that portion of said photosensitive layers which said charging means is facing, in the direction opposite said first direction.

4,607,935

ROLLER TRANSFER APPARATUS

Robert J. Kindt, Rochester, and Robert M. Peffer, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 18, 1984, Ser. No. 601,480

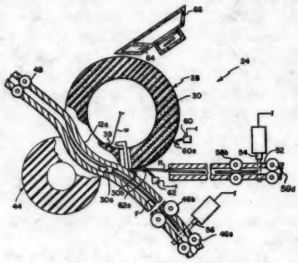
Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 TR **10 Claims**

1. Apparatus for electrostatically transferring at least one transferable image of electroscopic marking particles from an image-carrying member to a registered receiver member, said apparatus comprising:

electrically conductive means, selectively coupled to a source of electrical image-transferring potential, for effecting transfer of an image from an image-carrying member to a receiver member, said electrically conductive means including means for attaching a receiver member thereto and means for registering an image-carrying member relative to an attached receiver member;

compliant means for engaging said conductive means over an extended contact area to establish an effective transfer



zone between said conductive means and said compliant means; and

guide means, located adjacent to such extended contact area, for directing an image-carrying member into engagement with said registration means of said conductive means and then through such contact area between said conductive means and said compliant means, whereby in such extended contact area a transferable image on such image-carrying member is transferred to such attached receiver member when image-transferring potential is coupled to said conductive means.

4,607,936

ELECTROPHOTOGRAPHIC APPARATUS COMPRISING PHOTOSENSITIVE LAYER OF AMORPHOUS SILICON TYPE PHOTOCONDUCTOR

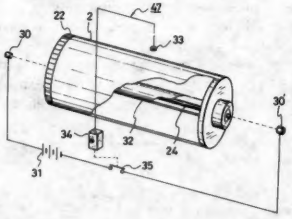
Nobuhiro Miyakawa, Abiko; Teruaki Higashiguchi, Tokyo; Koji Yano, Tokyo; Kazuo Yamamoto, Tokyo, and Yoshinobu Kawakami, Tokyo, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 28, 1984, Ser. No. 655,533

Claims priority, application Japan, Sep. 30, 1983, 58-180738; Oct. 31, 1983, 58-202825; Nov. 11, 1983, 58-173692[U]; Nov. 30, 1983, 58-183770[U]

Int. Cl.⁴ G03G *15/12*

U.S. Cl. 355—3 DR **16 Claims**



1. An electrophotographic apparatus comprising a photosensitive drum comprising an amorphous silicon type photoconductor layer formed on an electroconductive substrate, a main charging mechanism for charging the surface of the drum with charges having a predetermined polarity, an imagewise exposure mechanism for forming an electrostatic image corresponding to an image of an original on the surface of the drum, a

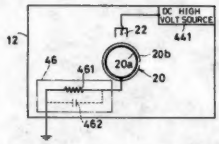
toner development mechanism for forming a toner image corresponding to the electrostatic image, a toner image transfer mechanism for transferring the toner image formed on the surface of the photosensitive drum to a predetermined paper sheet, a toner cleaning mechanism for removing the residual toner adhering to the surface of the photosensitive drum and a fixing mechanism for fixing the transferred toner image to said paper sheet, wherein a heating mechanism is arranged to heat the surface of the photosensitive drum and is connected to a temperature-adjusting mechanism for detecting the surface temperature of said drum and adjusting and maintaining said surface temperature at a temperature of 30° to 40° C.

4,607,937

ELECTROSTATIC RECORDING APPARATUS

Koji Minami, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Nov. 16, 1984, Ser. No. 672,374
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R **8 Claims**



1. An electrostatic recording apparatus, comprising:
a photosensitive body having a photoconductive layer;
a charging means for accumulating charges of a certain polarity on said photoconductive layer of said photosensitive body; and
a resistance means for connecting said photoconductive layer of said photosensitive body to a reference potential, whereby a surface potential of said photoconductive layer is maintained by a voltage resulting from said charges and a voltage developed across said resistance means at a time when a current flows through said resistance means.

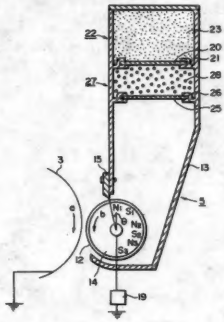
4,607,938

METHOD AND APPARATUS FOR FORMING A THIN LAYER OF DEVELOPER

Atsushi Hosoi, Tokyo; Kimio Nakahata, Kawasaki; Hatsuo Tajima, Matsudo; Hidemi Egami, Zama; Fumitaka Kan, Yokohama, and Shunji Nakamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,715
Claims priority, application Japan, Apr. 26, 1983, 58-73231; May 10, 1983, 58-80099; May 10, 1983, 58-80100; May 10, 1983, 58-80102; Jun. 14, 1983, 58-104985
Int. Cl.[4] G03G *15/08, 15/09*
U.S. Cl. 355—3 DD **42 Claims**

1. A developing apparatus for developing a latent image on an image bearing member, comprising:
a container having an opening adjacent a lower part thereof;
a developer carrying member movable along an endless path and between an inside of said container and an outside of said container;
magnetic field generating means, disposed in said developer carrying member, for generating a magnetic field;
a partition member in said container for separately supporting, before operating said developing apparatus, a first developer which is to form in operation a circulating base layer in said container and on a surface of said developer carrying member, and a second developer which is to be supplied into the base layer from a surface of said base layer, said first developer mainly including magnetic particles, and said second developer mainly including non-magnetic toner particles, wherein by retracting said partition member, the base layer of the first developer is formed on said developer carrying member, and then the second developer is formed on the surface of the base layer; and
a regulating member having an end portion cooperable with said magnetic field generating means to regulate an amount of the non-magnetic developer applied on said developer carrying member from said container, wherein



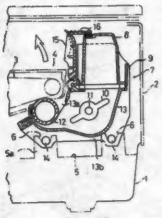
when said developer carrying member moves, a circulation is formed in said base layer, including upward flow mainly of the magnetic particles substantially along the surface of said developer carrying member and including downward flow by gravity above a portion of the upward flow and in the neighborhood of said regulating member, whereby the non-magnetic developer in the second developer is taken into the base layer, and the non-magnetic developer is charged and applied onto the surface of said developer carrying member.

4,607,939

REMOVABLE DEVELOPING UNIT FOR AN ELECTROSTATIC RECORDING APPARATUS

Takeshi Saito, Ichikawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Sep. 24, 1984, Ser. No. 653,932
Claims priority, application Japan, Sep. 22, 1983, 58-175763; Sep. 22, 1983, 58-175764
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD **4 Claims**



1. A removable developing unit for an electrostatic recording apparatus comprising a casing having an aperture on one side, and a developing sleeve exposed in said aperture to be positioned against a photoconductive member when the developing unit is mounted in the recording apparatus,
wherein the improvement comprises:

a cover pivotably mounted to said casing and movable to open and close said aperture; and

automatic closing means in said casing for automatically closing said cover when said developing unit is removed from said recording apparatus.

4,607,940

REVERSED DEVELOPMENT ELECTROPHOTOGRAPHIC PRODUCTION PROCESS AND APPARATUS

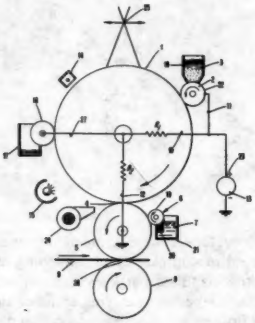
Pham K. Quang, Dieppe, France, assignor to Rhone-Poulenc Systemes, Nanterre, France

Filed Dec. 18, 1984, Ser. No. 683,169

Claims priority, application France, Dec. 22, 1983, 83 20799

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R **15 Claims**



1. In a reversed development electrophotographic reproduction process in which an electrostatic latent image on a photoconductor surface is developed by magnetic means, with a single component magnetic development powder, to form a reversed powder image corresponding to the latent image, and the powder image is transferred onto a conductive support wetted with a volatile dielectric liquid of volume resistivity greater than $10^3 \Omega cm^2/cm$, the improvement which comprises connecting each of the photoconductor surface, the magnetic means and the conducting support to the terminal of at least one voltage generator, the terminal having the same polarity as that of the charge on the photoconductor surface.

4,607,941

PROCESS UNIT AND IMAGE FORMING APPARATUS USING SUCH UNIT

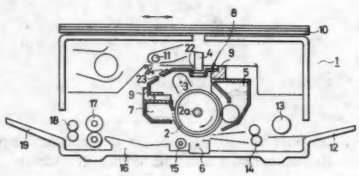
Haruhisa Honda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,884

Claims priority, application Japan, Apr. 30, 1982, 57-074153

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R **12 Claims**



1. An interchangeable process unit removably mountable with respect to the body of an image forming apparatus including operative components, said process unit having:

an endlessly movable photosensitive medium;

means to form a latent image on said photosensitive medium;

a housing for integrally supporting said photosensitive medium and said means to form a latent image; and

adjusting means provided on the exterior of said housing for adjusting the latent image formation conditions for said photosensitive medium without adjusting said operative components of said body.

4,607,942

ELECTROSTATIC COPYING APPARATUS

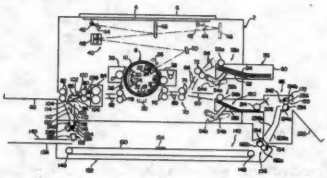
Haruo Koyama, Yawata, and Toshio Nishino, Sakai, both of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Sep. 14, 1984, Ser. No. 650,605

Claims priority, application Japan, Sep. 19, 1983, 58-171384; Sep. 19, 1983, 58-171385; Oct. 24, 1983, 58-198472; Nov. 26, 1983, 58-221414; Nov. 26, 1983, 58-221416; Jan. 31, 1984, 59-14418; Jan. 31, 1984, 59-14419; Feb. 29, 1984, 59-36293

Int. Cl.[4] G03G *15/00*; B65H *5/22*

U.S. Cl. 355—3 SH **41 Claims**



1. An electrostatic copying apparatus comprising:

a main housing;

an electrostatic photosensitive member disposed within the main housing and adapted to be moved through an endless path;

means defining a latent electrostatic image-forming zone, a developing zone and a transfer zone successively in the moving direction of the photosensitive member along the endless path;

means for forming a latent electrostatic image on the photosensitive member in the latent electrostatic image-forming zone;

developing means in the developing zone for developing the latent electrostatic image on the photosensitive member to a toner image;

copying paper feeding means;

copying paper receiving means;

means defining a copying paper conveying passage extending from the paper feeding means to the paper receiving means via the transfer zone;

copying paper conveying means for conveying a copying paper through the copying paper conveying passage;

transfer means for transferring the toner image on the photosensitive member to copying paper in the transfer zone;

fixing means for fixing the toner image on the copying paper, said fixing means being disposed at that position of the paper conveying passage which is downstream of the transfer zone;

copying paper swerving means disposed within the paper conveying passage and between the fixing means and the paper receiving means and adapted to be selectively held at a non-operating position at which the swerving means permits copying paper to be discharged into the paper receiving means through the paper conveying passage and an operating position at which the swerving means swerves the copying paper from the conveying passage;

paper re-feeding means for feeding the received copying paper into the paper conveying passage at a position upstream of the transfer zone;

copying paper returning means for returning swerved copying paper to the paper re-feeding means while the front and back surfaces of the paper are reversed, said swerved copying paper having been swerved from the paper conveying passage by the paper swerving means held at the operation position; and

a conveying direction controlling roller unit disposed between the paper swerving means and the paper returning means and adapted to be rotated selectively in a normal direction and a reverse direction, the copying paper, when swerved from the paper conveying passage by the copying paper swerving means being held at its operating position, is conveyed while being nipped by the conveying direction controlling roller unit, and when the conveying direction controlling roller unit continues to be rotated in a normal direction until the trailing end of the copying paper passes the conveying direction controlling roller unit, the copying paper is caused to make a returning movement by the action of the paper re-feeding means, and when the rotating of the conveying direction controlling roller unit is switched to a reverse direction from the normal direction, the copying paper with its front and back surfaces and its leading and trailing ends reversed is returned to the copying paper conveying passage at a position downstream of the paper swerving means and is discharged into the paper receiving means.

4,607,943

CONTROL CIRCUIT FOR AN ELECTROSTATIC COPYING APPARATUS

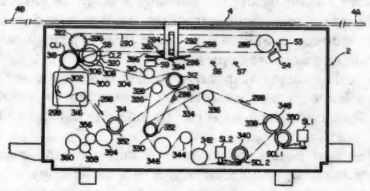
Masahiro Yoshioka, Matsubara; Masahiro Murakami, Shijonawate; Yoichiro Irie, Suita; Tsugio Nakanishi, Osaka; Eiji Tsutsui, Amagasaki; Noriyuki Iwao, Kobe; Junichi Hirobe, Osaka, and Takahiro Wakikaido, Yao, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 424,943, Sep. 27, 1982. This application May 9, 1985, Ser. No. 732,329

Claims priority, application Japan, Nov. 30, 1981, 56-192395

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R **5 Claims**



1. An electrostatic copying apparatus adapted for copying at variable ratios comprising

an optical device including at least one optical element mounted so that it can freely move between at least two positions including an equal scale position for projecting the image of an original document on a substantially equal scale onto a photosensitive member and a predetermined ratio position for projecting the image of the document at a predetermined ratio onto the photosensitive member,

a drive source drivingly connected to said at least one optical element for moving it, and

a control circuit which comprises an equal scale position detecting switch for detecting said at least one optical element when it is positioned at said equal scale position or its vicinity and thereby producing a signal indicating the equal scale position, a predetermined ratio position detecting switch for detecting said at least one optical element when it is positioned in said predetermined ratio position or its vicinity and thereby producing a signal indicating the predetermined ratio position, and a change-over switch to be manually operated, and which when the change-over switch is operated during the production of said equal scale position signal, energizes the drive source to move said at least one optical element to said predetermined ratio position, and when the predetermined ratio position signal is thereby produced, deenergizes the drive source after the lapse of a predetermined delay time, and which when the change-over switch is operated during the production of the predetermined ratio position signal, energizes the drive source to return said at least one optical element to the equal scale position, and when the equal scale position signal is thereby produced, deenergizes the drive source after the lapse cf a predetermined delay time; characterized in that said control circuit further comprises a power supply detector adapted to form a signal indicating the operation of a power supply when a power supply switch of the copying apparatus is closed, and when the signal indicating the operation of the power supply is produced, the control circuit energizes the drive source to return said at least one optical element to the equal scale position if the equal scale position signal is not produced, and energizes the drive source to move said at least one optical element to the predetermined ratio position and then return it if the equal scale position signal is produced.

4,607,944

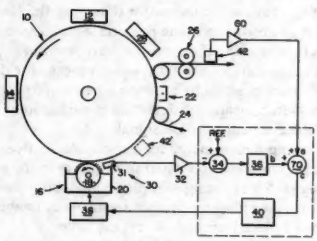
APPARATUS FOR CONTROLLING TONER REPLENISHMENT IN ELECTROGRAPHIC COPIER

Allen J. Rushing, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 7, 1985, Ser. No. 742,357

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—14 D **4 Claims**



1. In an electrographic reproduction apparatus comprising means for contacting an electrostatic image-bearing surface with a mixture of toner and carrier particles, such contact being effective to apply toner particles to such surface to render such electrostatic image visible, and means for replenishing such mixture with additional toner to compensate for toner depletion resulting from rendering such electrostatic charge visible, an improved toner replenishment control apparatus comprising:

(a) means for producing a first signal proportional to the level of concentration of toner in said mixture;

(b) means for producing a second signal proportional to the rate at which toner is applied to said surface in rendering such image visible;

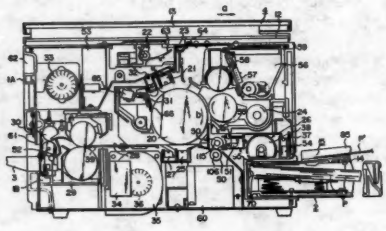
(c) means for summing said first and second signals to produce a control signal; and

(d) means responsive to said control signal for activating said replenishing means.

4,607,945
IMAGE FORMING APPARATUS

Fumito Ide, Zama; Toshiyuki Sogo, Ebina; Kouzou Matsuyama, Yokohama, and Shinichi Hashimoto, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 27, 1984, Ser. No. 644,922
Claims priority, application Japan, Aug. 31, 1983, 58-159296
Int. Cl.[4] G03G *15/00, 21/00*
U.S. Cl. 355—14 R 6 Claims



1. An image forming apparatus comprising:

document placing means having a document table on which a document is placed;

table position detecting means for detecting a table home position, an exposure start position, a paper start position and a table limit position, said position detecting means including first switch means for detecting the table home position to produce a home position signal, second switch means for detecting the exposure start position to produce an exposure start signal, third switch means for detecting a paper start position to produce a paper start signal, and fourth switch means for detecting the table limit position to produce a limit position signal;

image forming means including a photoconductive member and exposure means operated in response to the exposure start signal for exposing said photoconductive member to form on said photoconductive member an image of said document placed on said document table;

moving means for moving said document table in a first direction for scanning the document and a second direction reversed to the first direction for returning the document table to the start position;

transfer means for transferring the image formed on said photoconductive member onto a paper sheet;

paper feeding means operated in response to the paper start signal to feed the paper sheet to said transfer means;

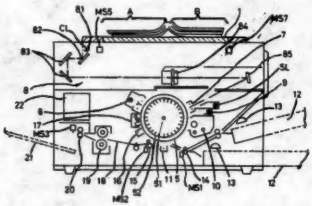
paper size measuring means for measuring a size of the paper sheet which is fed first, to obtain a size information, said measuring means including a switch means actuated by the leading edge of the paper and means for measuring the size of the paper from the leading edge of the paper to the trailing edge of the paper in response to the detection of the paper leading edge; and

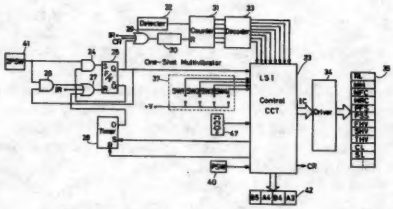
control means for controlling said moving means in response to the size information in order to move said document table, moved in the first direction, in the second direction from a position corresponding to the size of the paper sheet obtained from said paper measuring means.

4,607,946
AUTOMATIC DUAL ELECTROPHOTOGRAPHIC COPYING MACHINE

Hiroaki Uchiyama; Yoshiaki Ibuchi, both of Nara, and Katsuyoshi Fujiwara, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 11, 1984, Ser. No. 619,303
Claims priority, application Japan, Jun. 15, 1983, 58-108278
Int. Cl.[4] G03G *15/00, 21/00*
U.S. Cl. 355—14 R 4 Claims





1. A control system in an electrophotographic copying machine, comprising:

mode switch means for selecting a single or dual copying mode in said copying machine, wherein said dual copying mode copies at least two image areas of a single document on one or more copy papers;

selection means, responsive to said dual mode switch, for selecting a copy paper size corresponding to one of said at least two image areas of said single document to be copied;

detection means, responsive to said selection means, for generating an execute signal when the copy paper size selected is of a predetermined size less than the maximum size of said single document; and

control means, responsive to said execute signal, for controlling execution of a copying operation in said dual copying mode;

said execution including copying the first of said at least two image areas of said single document on a first copy paper and copying the second of said at least two parts of said single document on a second copy paper.

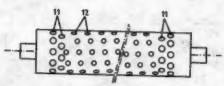
4,607,947
CONTACT FIXING AND CLEANING METHOD AND APPARATUS

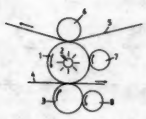
Hendrik Ensing, Velden, and Jacobus H. M. Peulen, Haelen, both of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

Filed Nov. 16, 1984, Ser. No. 671,953
Claims priority, application Netherlands, Nov. 30, 1983, 8304099
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 18 Claims

6. In a contact fixing apparatus for fixing images of heat-sof-

tenable toner onto sheet material, including a circulating image contacting fixing member and a circulating second fixing member, said members having respective peripheral surfaces that press one against the other in and move together through a contact fixing zone to fix a heat-softened toner image being carried into said zone onto a sheet material being passed therethrough in the nip between said surfaces, means for removing residues of heat-softened toner and paper dust from said surface of a said fixing member, comprising in a contact cleaning zone of the path of the said fixing member surface a circulating cleaning member having a peripheral surface to which said





toner will adhere preferentially rather than to said fixing member surface, said cleaning member surface contacting said fixing member surface in and being movable with it through said cleaning zone to collect residues from it and press them into a toner layer carried on said cleaning member surface, and said cleaning member surface having a multiplicity of spaced-apart perforations therein which are so disposed that on repeated movements of said cleaning member surface with said fixing member surface through said cleaning zone said toner layer while being continually pressed thin has excess material present in it displaced from it into said perforations.

4,607,948

DUPLEX RECORDING METHOD AND APPARATUS FOR PRODUCING DUPLEX PRINTING FROM SIMPLEX ORIGINAL

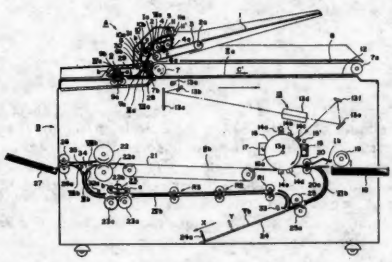
Masataka Naito, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,123

Claims priority, application Japan, May 25, 1983, 58-91880; May 25, 1983, 58-91881

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—24 **27 Claims**



1. A method of producing duplex copies from simplex originals, comprising:

sequentially feeding one at a time simplex originals from a stack of simplex originals to a reading position;

performing, for every other fed original, a first copy operation to produce one sided copies from said every other original;

sequentially feeding again one at a time the same orignals; and

performing, for every other remaining fed original, a second copy operation to form images on such sides of the one sided copy as do not bear the images by the first copy operation step, to produce duplex copies from simplex originals;

wherein in the feeding step, the originals are fed, while being inverted, to the reading position from one side thereof, and then are fed back, while being inverted back, from said one side of the reading position to the stack.

4,607,949

PHOTOGRAPHIC PRINT MAKING METHOD

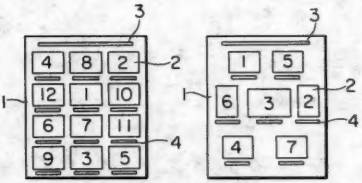
Haruo Hakamada; Tadashi Amano, and Hiromitsu Kamiyama, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,149

Claims priority, application Japan, Aug. 9, 1983, 58-144437; Oct. 14, 1983, 58-158131[U]

Int. Cl.⁴ G03B *27/52, 27/32*

U.S. Cl. 355—40 **8 Claims**



1. A photographic printing method comprising

a. entering information into a storage medium as to location of each of a plurality of image frames on a negative film to be printed;

b. entering data into said storage medium as to the desired print position of each of a selected number of said frames;

c. controlling a negative film transporting means and a printing paper moving means based on said information and said data to independently locate each of said selected number on said paper.

4,607,950

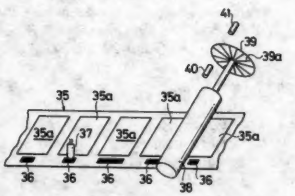
MARK DETECTION APPARATUS FOR A MICRO-ROLL FILM

Kenjiro Ishii; Masaharu Aragaki; Osami Kato, and Masato Higashi, all of Kanagawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 654,353, Sep. 25, 1984, abandoned. This application Apr. 25, 1985, Ser. No. 726,874

Int. Cl.⁴ G03B *27/52*

U.S. Cl. 355—41 **4 Claims**



1. A mark detecting apparatus for measuring lengths of

indicator marks of different lengths provided on respective frames of an advancing micro-roll film comprising;

first means including a single photo responsive element sensing said indicator marks at a predetermined location for generating mark detecting signals of durations corresponding to the time of passage of respective marks past said location,

second means for generating successive pulses corresponding to equal increment advances of the film, and

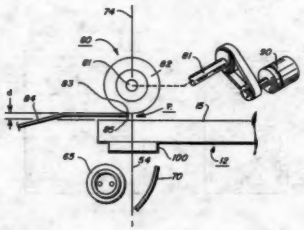
third means for counting said pulses during the duration of respective mark detecting signals as indications of the lengths of respective marks.

4,607,951

COMPENSATING PLATEN FOR DUAL MODE IMAGE INPUT TERMINALS

Ned J. Seachman, Penfield, and Joseph P. Taillie, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 2, 1985, Ser. No. 729,516
Int. Cl.[4] G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **5 Claims**



1. A platen for a multi-mode document scanner which in one mode supports a document to be scanned face down on a preset first scanning area of said platen for scanning by a movable scanning means, and in a second mode provides a preset second scanning area adjacent one end to permit scanning of a moving document by said scanning means when stationary, comprising:

a generally rectangular plate-like member, said member being formed from a transparent rigid material to permit the document being scanned to be viewed through said member at said first and second scanning areas;

said member first scanning area having a substantially uniform thickness of predetermined dimension;

said member second scanning area having a substantially uniform thickness different from said member first scanning area to enable scanning of said moving document to occur in preset spaced relation from said member.

4,607,952

PHOTOGRAPHIC IMAGE PRECISION REPROPORTIONING SYSTEM

Thomas L. Byers, P.O. Box 26624, Oklahoma City, Okla. 73126

Filed Nov. 29, 1984, Ser. No. 676,336
Int. Cl.[4] G03B *27/10, 27/68*
U.S. Cl. 355—84 **13 Claims**

1. A photographic image reproportioning apparatus, comprising:

a base having a planar top;

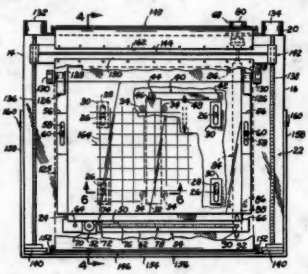
transparent carriage means overlying said top for supporting a photographic film having an image thereon;

platen means interposed between said top and said carriage means for supporting a photosensitive sheet in printing contact with the photographic film;

means mounting said platen means on said top for to and fro retilinear movement and normally biasing said platen means in one direction;

manually adjustable calibration bar means contacting and movable with said platen means for limiting movement thereof to a predetermined film image dimension;

light impervious mask means including an elongated sheet overlying said carriage means in the direction of platen movement and having a photo-light passing slit extending transversely of the direction of platen means travel for the passing of film exposure light therethrough;



roller means at respective end portions of said sheet for winding up and paying out respective end portions of said sheet in response to movement of the mask slit;

yoke means journalling one said roller means for vertical pivoting movement of one end portion of said sheet toward and away from said carriage means; and,

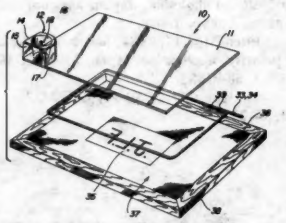
motor driven means for simultaneously moving said mask slit and said calibration bar means in the same or opposite direction along the platen means travel path.

4,607,953

VACUUM EXPOSURE REGISTRY APPARATUS

Jimmy L. Farris, 2394 N. Waterbury, Orange, Calif. 92665

Filed Aug. 6, 1985, Ser. No. 762,927
Int. Cl.[4] G03B *27/20*
U.S. Cl. 355—91 **14 Claims**



1. An apparatus for holding a thin, image-bearing sheet in intimate contact with a flat photo-sensitized surface for registering said image on said surface when both are exposed to light comprising:

(a) A rigid, transparent plate, having a flat lower surface and a generally parallel upper surface,

(b) an air conduit having an upper opening and a lower opening passing through said upper and lower surfaces of said plate, and

(c) a flexible elastomeric tube adjustably joinable at opposite ends of said tube to form a closed loop of desired size and shape, whereby placing said loop around said image-bearing sheet lying on said photo-sensitized surface, and placing said plate down upon the upper surface of saio loop with said lower conduit opening within the perimeter of

said loop forms an air-tight region lying within said perimeter boundary of said loop and between said lower surface of said plate and said upper surface of said photo-sensitized surface, thereby permitting said air-tight region to be evacuated by means of a vacuum source communicating with said upper conduit opening.

4,607,954

AUTOMATIC DEVELOPING BIAS CONTROL DEVICE

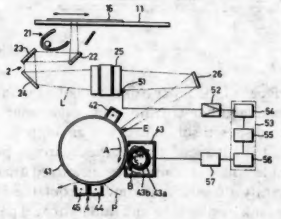
Haruya Osaka, Osaka; Hiroshi Kimura, Habikino; Masahiko Hisajima, Osaka; Yutaka Shigemura, Takarazuka; Seiji Kaminaga, Matsudo; Shinobu Satonaka, Toyonaka, and Mitsuya Ishito, Sakai, all of Japan, assignors to Mita Kogyo Kabushiki Kaisha, Japan

Filed Feb. 23, 1984, Ser. No. 582,683

Claims priority, application Japan, Feb. 26, 1983, 58-31235

Int. Cl.[4] G03G *15/09, 21/00*

U.S. Cl. 355—14 D **4 Claims**



1. An automatic developing bias control device for an electrophotographic copying machine in which a document image is directed along a path through a lens onto a photoreceptor to form an electrostatic latent image on the photoreceptor and the electrostatic latent image is developed into a toner image by a developing device which produces a developing bias that is changed in accordance with the density of the document image, said automatic developing bias control device comprising a photoelectric converting device within the image path and adjacent the lens for detecting the document image and generating an electric signal corresponding to the density thereof; delaying means comprising a first low pass filter, a bucket brigade device, and a second low pass filter, for delaying the electric signal from the photoelectric converting device for a time associated with the time taken for the electrostatic latent image to travel from the position at which said latent image is formed to the position at which said latent image is developed by the developing device; and control means responsive to the output from the delaying means for adjusting the developing bias of the developing device to control the density of the toner image.

4,607,955

STOCK CONSISTENCY TRANSMITTER

James O. Corbett, Eustis, Fla., assignor to The Electron Machine Corporation, Umatilla, Fla.

Filed Aug. 16, 1984, Ser. No. 641,555

Int. Cl.[4] G01N *21/53*

U.S. Cl. 356—342 **8 Claims**

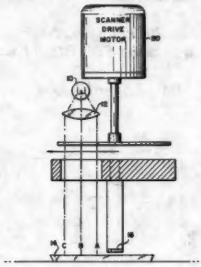
1. A method for electro-optically determining the consistency of a fibrous slurry, or other dispersed reflective suspension, the steps comprising:

a. projecting a beam of light into the slurry;

b. detecting with a photo-detector, light reflected from particles suspended in the slurry while causing cyclical repetitive relative movement between the detector and the light beam so that the electrical output of the detector is substantially a sawtooth AC voltage;

c. controlling the intensity of the light beam to hold the peak-to-peak value of said AC voltage constant;

d. converting said voltage to a square wave form, squaring at 50% of peak-to-peak value, and measuring the ratio of the time of positive to the time of negative portions of the square wave to derive a signal proportional to consistency



and substantially independent of brightness of, material being measured and light absorption by the liquid portion of the slurry.

4,607,956

POSITION DETECTING APPARATUS

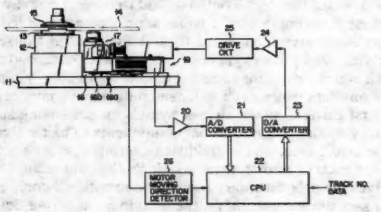
Atsushi Ishihara, and Tomohisa Yoshimaru, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 15, 1984, Ser. No. 580,184

Claims priority, application Japan, Feb. 17, 1983, 58-22148[U]

Int. Cl.[4] G01B *11/14*

U.S. Cl. 356—375 **3 Claims**



1. A position detecting apparatus comprising:

an optical scale having a grid pattern, said optical scale being movable in conjunction with a moving member, said grid pattern being formed as a scale graduation and having grid segments disposed at a predetermined pitch;

scale detecting means including: a mask having an opening with a width which is substantially one-half the pitch of said grid segments and a photoelectric element being masked by said mask, said scale detecting means converting light which has passed through said optical scale and said opening of said mask to an analog signal which corresponds to the pitch of said grid segments said analog signal having a plurality of level signal components;

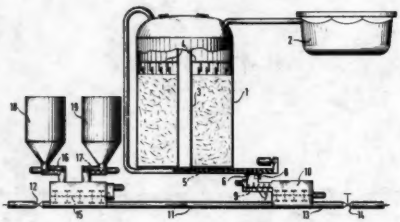
digitizing means for extracting selected signal components from said level signal components of said analog signal of said scale detecting means, which correspond to the pitch of said grid segments, said digitizing means converting said signal components to digital data; and

position information means for converting said digital data of said digitizing means to position information of said moving member.

4,607,957
PLANT FOR THE CONTINUOUS PREPARATION OF FLOATED FODDER

Hermann Johanning, Melle, Fed. Rep. of Germany, assignor to Engelbrecht & Lemmerbrock GmbH & Co., Melle, Fed. Rep. of Germany

Filed Jun. 20, 1983, Ser. No. 506,118
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1982, 3223198
Int. Cl.[4] B01F *15/04*
U.S. Cl. 366—156 9 Claims



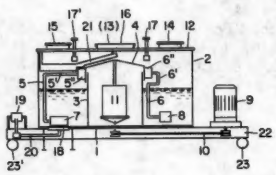
1. In a plant for the continuous production of fodder in aqueous suspension from humid grit and supplementary fodder components, using a gastight high-rise silo containing the humid grit and comprising a central gravity shaft having perforations to which the humid grit is fed from the top layer thereof, conveyor means for feeding the humid grit to said perforations, a transverse conveyor connected to the bottom end of said central gravity shaft for conveying outwardly the humid grit falling down to the bottom of said shaft, and a discharge pipe connected to said transverse conveyor and leading to feeding points, the improvement comprising a first metering device situated adjacent to the outlet of said transverse conveyor, a first gastight mixer, incorporating an agitating mechanism connected to said discharge pipe and coupled in gastight manner to the outlet of said transverse conveyor via said first metering device, a water supply pipe, provided with a regulator valve, connected to said first gastight mixer for supplying water thereto in controlled manner, a second mixer which is not gastight is installed in said water supply pipe for supplying supplementary fodder and nutritional components to said first gastight mixer, storage vessels for containing supplementary fodder and nutritional components to be received by the second mixer, and individual metering devices provided one for each of said storage vessels so that the second mixer receives the supplementary fodder and nutritional components from said storage vessels via the individual metering devices.

4,607,958
APPARATUS FOR STIRRING HYDROGEL PARTICLES OF WATER-SOLUBLE POLYMER

Iwao Ohshima; Takeshi Narita, both of Yokohama; Ryoji Handa, Yokosuka, and Jun Hosoda, Yokohama, all of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1984, Ser. No. 678,451
Claims priority, application Japan, Dec. 16, 1983, 58-237697
Int. Cl.[4] B01F *15/02, 7/20*
U.S. Cl. 366—192 12 Claims

1. Apparatus for stirring hydrogen particles of a water-soluble polymer comprising a stirring tank configured as a drum having a top provided with an opening for introducing into the tank the water-soluble polymer the hydrogel particles of which are to be stirred, an inner drum in the stirring tank coaxial therewith and of a lesser diameter and of a shorter height so that it fits entirely within the stirring tank and defines an annular space between the inner wall surfaces of the stirring tank and outer wall surfaces of the inner drum, said space containing in use hydrogel particles of a water-soluble polymer introduced through said top opening to be stirred in said space, stirring means for stirring the hydrogel particles of the soluble-water polymer contents in said space comprising vertically disposed driven stirring arms each mounting a respective vane thereon for advancement by the corresponding stirring arm along a circular path in said space, one of the stirring arms being disposed vertically to travel along a circular path in the vicinity of inner wall surfaces of the tank, another of the stirring arms being disposed to travel along a circular path in the vicinity of outer wall surfaces of the inner drum, the distance between said one stirring arm and said inner wall surfaces of said tank being less than twice the diameter of said one stirring arm, the distance between said another stirring arm and said



outer wall surfaces of the inner drum being less than twice the diameter of said another stirring arm, each vane having a leading surface disposed substantially at an angle to a circular path at which it is advanced so that the hydrogel particles of the water-soluble polymer contents being stirred are urged in a direction inwardly of said space away from the inner wall surfaces of the tank by one vane and said hydrogel particles are urged in a direction inwardly of said space away from the outer wall surfaces of the inner drum by another vane, said tank having a bottom, and both vanes being disposed in the vicinity of said bottom so that said contents are urged away from said bottom during advancement of each of the vanes along a corresponding circular path.

4,607,959
VANED STIRRER FOR USE IN HIGH TEMPERATURE ATMOSPHERE

Kenji Miyazaki; Ichitaro Ogawa; Hisayoshi Yoshida; Kazuo Kobayashi; Tsuyoshi Hagio; Hidetoshi Ueno, and Shigeru Akiyama, all of Tosu, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 677,019
Claims priority, application Japan, Dec. 1, 1983, 58-228080
Int. Cl.[4] B01F *7/00*
U.S. Cl. 366—343 6 Claims

1. A heat-resistant vaned stirrer having a bending strength greater than 200 kg/cm^2 and formed from a carbon-ceramic, composite material prepared by a process comprising:

sintering carbon or graphite powder which is blended with 10–50% by volume of a ceramic powder which consists of boron carbide alone or boron carbide and at least one member selected from the group consisting of carbides, borides and oxides.

4,607,960

PERFORMING CONTACT-FREE MEASUREMENT ON A WORKPIECE

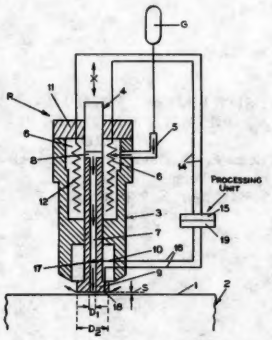
Gunther Wulff, Stein am Rhein, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 21, 1985, Ser. No. 714,640

Claims priority, application Switzerland, Mar. 26, 1984, 1504/84

Int. Cl.[4] G01K *3/02*

U.S. Cl. 374—7 6 Claims



1. A device for the contact-free measurement of the temperature of a workpiece comprising a housing having a chamber about a central axis; a measuring pin movably mounted within said chamber along the central axis thereof, said measuring pin having a base piece on one end thereof adjacent to and spaced from said workpiece and a central bore for communicating compressed gas from a source to an outlet opening provided on said base piece for impinging said compressed gas on said workpiece; and temperature sensing means located in said central bore and on said base piece for measuring the temperature at said central bore and said base piece and registering the sensed temperatures in a control facility and determining from said sensed temperatures the temperature of the workpiece.

4,607,961

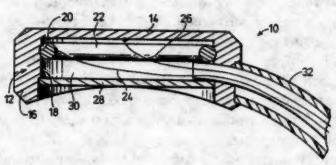
HEAT FLUX METER

John R. Wynnyckyj, Kitchener, and Edward Rhodes, Waterloo, both of Canada, assignors to University of Waterloo, Waterloo, Canada

Filed Dec. 2, 1983, Ser. No. 557,327

Int. Cl.[4] G01K *13/00*

U.S. Cl. 374—30 15 Claims



1. A method of measuring heat flux in an atmosphere of combustion gases in an enclosed space, which comprises:

exposing a surface of a thermoconductive material to said heat flux and to said atmosphere of combustion gases within said enclosed space and permitting said heat flux to impinge on said surface to establish a temperature gradient between the middle of said surface and the periphery thereof,

positioning a thermoelectrically-dissimilar material adjacent the periphery of said surface to form a thermoelectric junction with said thermoconductive material, said junction being wholly out of direct exposure to said radiation heat flux and wholly out of communication with the atmosphere of combustion gases in said enclosed space to establish an e.m.f. between the middle of the surface and said thermoelectrically-dissimilar material, and

measuring said e.m.f. as a determination of said heat flux.

4,607,962

OBJECT TEMPERATURE CONTROL DEVICE

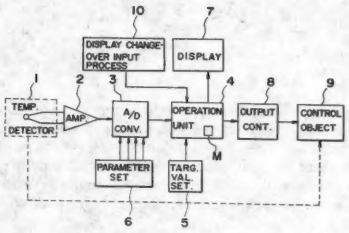
Toshiaki Nagao, Muko, and Yasuyuki Sukimoto, Yahata, both of Japan, assignors to Omron Tateisi Electronics, Co., Kyoto, Japan

Continuation of Ser. No. 497,199, May 23, 1983, abandoned. This application Jul. 26, 1985, Ser. No. 758,852

Claims priority, application Japan, May 28, 1982, 57-91859

Int. Cl.[4] F23N *5/02;* G01K *7/00*

U.S. Cl. 374—103 5 Claims



1. In a temperature control device having means for detecting the temperature of an object whose temperature is to be controlled, a target temperature value setting means for setting a desired value of temperature for the object, an operation unit means for determining temperature sampling periods and for effecting a predetermined calculation of an on/off output ratio which is based upon the ratio of said detected object temperature to said target temperature value, and means for producing an output based upon said on/off output ratio, wherein said output is to control means to maintain the temperature of said object at substantially the set desired value, the improvement comprising:

means for generating comparative output ratio signals during each sampling period by said operative unit means, and

means for periodically comparing said on/off output ratio to said comparative output ratio signals by said operative unit means,

whereby said output for control of said temperature is turned on in the next subsequent sampling period when said output ratio is greater than said comparative output ratio.

4,607,963

MULTI-CHANNEL INFRARED THERMOMETER

Michael A. Ulrickson, East Windsor, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,179

Int. Cl.[4] G01J *5/62;* G01N *21/00*

U.S. Cl. 374—131 3 Claims

1. A device for measuring the two-dimensional temperature profile of a surface comprising:

imaging optics for generating an image of light radiating from the surface, said image including an infrared radiation portion and a visible light portion;

a dichroic mirror positioned to receive said image, wherein

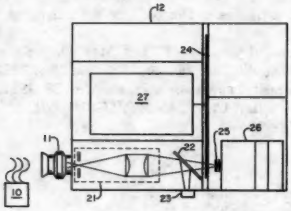
the dichroic mirror transmits the infrared radiation portion of said image and reflects the visible light portion of said image;

visible optics aiming means positioned to receive said reflected visible light portion of said image;

an optical chopper positioned to receive said transmitted infrared radiation portion of said image for modulating the intensity of said transmitted infrared image;

a selectable bandpass filter positioned to receive said modulated image;

a two dimensional infrared detector array having a plurality of detectors;



a light pipe array having one light pipe for each detector in said two dimensional detector array and positioned between said filter and said detector array wherein the light pipes of the light pipe array each simultaneously sample, transmit, and distribute a selected separate portion of said filtered image over the surface of its respective detector; and

multi-channel circuit means coupled to said two-dimensional detector array operative in response to signals generated by the detectors for providing electrical signals indicative of the two-dimensional temperature profile of the surface.

4,607,964

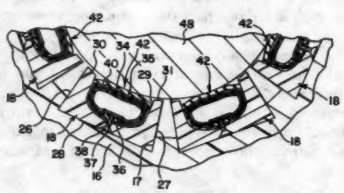
WATER LUBRICATED BEARING

James H. Kramer, Akron, and Roy L. Orndorff, Jr., Kent, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 692,138, Jan. 17, 1985, abandoned. This application Dec. 2, 1985, Ser. No. 803,196

Int. Cl.⁴ F16C *17/14, 33/22*

U.S. Cl. 384—98 **15 Claims**



1. A journal bearing assembly having a rigid support sleeve with a longitudinally extending center line, a plurality of circumferentially spaced first set of bearing elements mounted in said support sleeve, said first set of bearing elements having generally flat support surfaces for supporting a shaft, at least two of said first set of bearing elements having a bearing element therein for movement radially to and from said center line to selectively support a shaft journaled thereon independently of said first set of bearing elements that contained said moveable bearing elements, said radially moveable bearing elements defining a second set of bearing elements, power means connected to said second set of bearing elements operative to selectively move said second set of bearing elements radially to and from said center line, and said first set of bearing elements having a coefficient of friction that is different from the coefficient of friction of said second set of bearing elements.

4,607,965

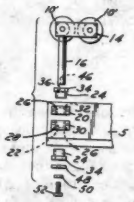
COMPOSITE BEARING WITH METAL HOUSING HAVING A BORE, WITH A TUBULAR PLASTIC INSERT THEREIN

James A. Belanger, Northville, Mich., assignor to Belanger, Inc., Northville, Mich.

Filed Mar. 8, 1985, Ser. No. 709,956

Int. Cl.⁴ F16C *33/20, 33/04*

U.S. Cl. 384—299 **14 Claims**



1. A door mounting assembly comprising:

a shaft having an upper end connected to a carriage means for supporting a door, said carriage means having at least one guide roller which is adapted to be received on a track, and a lower end having an internally threaded bore which is coaxial with said shaft;

a first metal housing having a top surface, a bottom surface, and at least one flat side surface, a first annular bore in said first metal housing extending from said top surface through said bottom surface, one end of said first bore opening into said top surface being provided with a first counterbore,

a first tubular plastic bearing insert having a flange at one end thereof, said insert being tightly received in said first bore, with said flange in said first counterbore, said tubular plastic bearing insert receiving said shaft;

a second metal housing spaced from said first metal housing and having a top surface, a bottom surface, and at least one flat side surface;

a second annular bore in said second metal housing coaxial with said first bore and extending from said top surface through said bottom surface, one end of said second bore opening into said bottom surface and being provided with a second counterbore,

a second tubular plastic bearing insert having a flange at one end thereof, said insert being tightly received in said second bore, with said flange in said second counterbore, said tubular plastic bearing insert receiving said shaft;

said lower end of said shaft extending below said second metal housing,

a thrust washer and a lock washer on said lower end of said shaft, with said thrust washer abutting the flange on said second plastic bearing insert, and

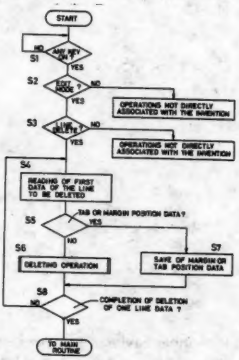
a threaded bolt extending through said washers into the threaded bore of said shaft.

4,607,966

ELECTRONIC TYPEWRITER EQUIPPED WITH TEXT MEMORY WHICH SAVES FORMAT DATA WHILE DELETING A LINE

Hideo Ueno; Hiroshi Kuno, and Yoshifumi Hamabe, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 9, 1984, Ser. No. 670,031
Claims priority, application Japan, Nov. 18, 1983, 58-218407
Int. Cl.[4] B41J 5/30
U.S. Cl. 400—63 6 Claims



1. An electronic typewriter comprising:

text memory means for storing printing data that are executed to print characters, said printing data comprising character data which correspond to said characters to be printed, and format data which are located between the character data to specify an arrangement of the characters to be printed, said character data and said format data being stored together in said text memory means;

line deleting means for deleting only the character data for a line stored in said text memory means;

detecting means for detecting the format data in the printing data for the line to be deleted by said line deleting means; and

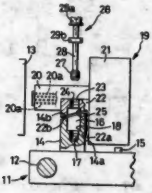
saving means for saving the detected format data in a predetermined position of said text memory means when the character data is deleted by said line deleting means.

4,607,967

PRINTING APPARATUS

Yoshikatsu Hirata, and Shigeo Ishikawa, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 25, 1985, Ser. No. 694,815
Claims priority, application Japan, Jan. 31, 1984, 59-12922[U]
Int. Cl.[4] B41J 1/56, 1/60
U.S. Cl. 400—175 8 Claims



1. A printing apparatus having a platen for supporting a sheet of paper, comprising:

a carriage movable along the length of said platen, and including an upward protrusion having a top surface which includes a first slant part inclined downwardly in a direction toward said platen, and a side surface on the side of said upward protrusion remote from said platen;

a print head including a mounting portion resting on said upward protrusion, said mounting portion having a bottom surface which includes a second slant part in abutting contact with said first slant part, said second slant part terminating in a downwardly extending projection at the end remote from said platen; and

fixing means for clamping said mounting portion of said print head to said upward protrusion of said carriage substantially in the direction of height of said upward protrusion and with said slant parts engaged with each other,

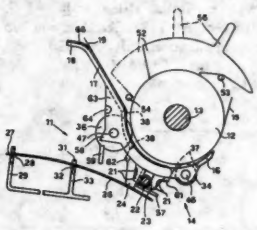
the angle of inclination of said first and second slant parts when combined with clamping action of said fixing means producing a component of force sufficient to force said downwardly extending projection of said print head against said side surface of said protrusion.

4,607,968

PAPER PRESSING DEVICE FOR PRINTING MACHINES

Ugo Carena, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Italy

Filed Feb. 23, 1984, Ser. No. 582,776
Claims priority, application Italy, Mar. 7, 1983, 67256 A/83
Int. Cl.[4] B41J 13/054
U.S. Cl. 400—637.2 8 Claims



1. A paper pressing device for a printing machine of the type comprising:

a platen roller which defines a line of printing;

a control shaft which is disposed below, parallel and on the entire length of the platen roller and comprises a series of grooves;

loading elements;

a fixed abutment member; wherein the paper pressing device guides a sheet of paper towards the line of printing and comprises:

a modular plate member having: a lower guide portion of part cylindrical shape, a substantially planar portion which is inclined with respect to the horizontal plane and extends above the platen roller; two lateral ribs, each having two bushings; and two forks, wherein each fork is connected with a corresponding lateral rib, and is slidably guided by a corresponding groove in the control shaft and wherein the engagement of the forks with the series of grooves prevents axial movements of the modular plate member with respect to the platen roller; a frontal rotatable shaft and a rear rotatable shaft, both journaled on the bushings of the lateral ribs of said modular plate member parallel therebetween and parallel to the platen roller; and wherein said modular plate member further comprises a series of frontal pressing rollers, mounted on said frontal shaft, a series of tear pressing rollers, mounted on said rear shaft, a shoulder disposed adjacent to the rear rotatable shaft, an intermediate element disposed between the two forks and projecting from the lower guide portion, and

two longitudinal ribs connected with the two lateral ribs, the two lateral ribs, the two forks and the intermediate element;

spring means disposed below the modular plate member comprising a leaf spring having a free end and an intermediate portion, wherein the loading elements engage said intermediate portion to load the leaf spring in order to cause said free end to engage with said intermediate element to urge the modular plate member towards the platen roller parallel thereto with the frontal pressing rollers and the rear pressing rollers pressing against the outside surface of the platen roller; and

cam means mounted on the control shaft and arranged to cooperate with said free ends to disengage the free end from the intermediate element in order to cause the modular plate member to move radially away from the plate roller, and the frontal pressing rollers and the rear pressing rollers to disengage the platen roller, wherein the modular plate member moves downwardly under the force of gravity unit it is stopped by means of the shoulder against said fixed abutment member and with the bottom of the forks arrested against the outside surfaces of the grooves of the control shaft so that the modular plate member is positioned inclined with the planar portion away from the platen roller to make it easier to insert a sheet of paper.

4,607,969

PRINTER WITH SHEET FRONT LOADER

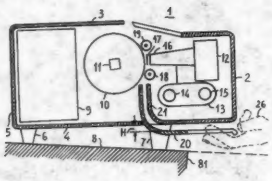
Giancarlo Collina, Cermenate, Italy, assignor to Honeywell Information Systems Italia, Milan, Italy

Filed Oct. 31, 1984, Ser. No. 666,705

Claims priority, application Italy, Nov. 23, 1983, 23834 A/83

Int. Cl.⁴ B41J *13/14*

U.S. Cl. 400—642 **3 Claims**



1. A printer with sheet front end loader, having a body with a bottom and a front end and feeding means in said body to advance a sheet on a platen, characterized in that said front end loader comprises a chute placed below the bottom of the printer body, said chute being formed by a bottom plate extending up to the body front end and having at least an opening or indentation elongated perpendicularly to the front end, said bottom of the printer body having a smooth shoe projecting from said bottom opposite to said opening or indentation in order to allow, through said opening or indentation, further manual advancement of a sheet towards a rear position of the chute, when said sheet is inserted in the chute, by exerting a pressure on said sheet, through said opening or indentation, against said shoe.

4,607,970

BINDER FOR PERFORATED SHEETS

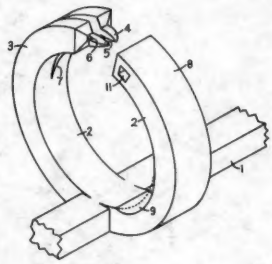
Paul Heusinkveld, 3800 N. Fairfax Dr., Apt. 1112, Arlington, Va. 22203, assignor to Ted Scudder and Paul Heusinkveld, both of Arlington, Va.

Filed Feb. 5, 1985, Ser. No. 698,445

Int. Cl.⁴ B42F *13/16, 13/02*

U.S. Cl. 402—20 **8 Claims**

1. An easily openable and closable one piece binder made of molded plastic material including a narrow elongated base member which allows bound sheets to flip over in a manner corresponding to the sheets in a spiral notebook and at least one pair of mounted plastic ring portions projecting laterally from opposite sides of said base member, said at least one pair in substantial alignment with each other, one of each said at least one pair of ring portions terminating in a pair of resilient projecting members having top, bottom and lateral sides, said projecting members being separated by an elongated slot, the other one of said at least one pair of ring portions terminating in a guide member having top, bottom and lateral sides, said guide member shaped to receive said pair of projecting members so that the outer surfaces of the rings join to form a surface which does not obstruct free movement of the sheets on the



rings, said guide member having a section extending to one side of said other ring portion and defining a laterally extending locking surface portion, one of said projecting members also having a laterally extending locking surface portion corresponding to the laterally extending surface portion in said other ring portion whereby when said two ring portions are moved toward each other, the projecting members of said one ring portion enter the guide memeber in the other ring portion and said two laterally extending surface portions are brought into releasable locking engagement, requiring squeezing the elongated slot separated members laterally in parallel to the base member for easily releasable disengagement.

4,607,971

SHAFT COUPLING

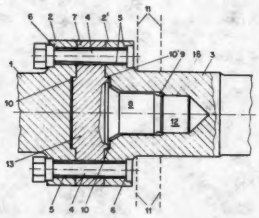
Max Hartmann, Baden, and Michel Rollier, Nussbaumen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 6, 1984, Ser. No. 637,816

Claims priority, application Switzerland, Oct. 24, 1983, 5748/83

Int. Cl.⁴ F16D *9/00*

U.S. Cl. 403—2 **14 Claims**



1. A shaft coupling arrangement comprising first and second rotatable machine shafts, a coupling flange having bolt receiving holes at an end of each shaft, coupling bolts for coupling said flanges together, said first shaft having an end portion that is structurally weakened to provide a predetermined breaking point spaced axially from said coupling flange, safety means for

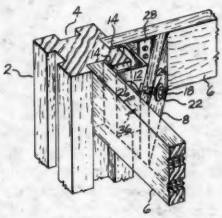
preventing deflection and fly away of the first shaft in the event said first shaft breaks at the predetermined breaking point, said safety means including a guiding element extending axially from said flange a distance greater than the predetermined breaking point.

4,607,972

DETACHABLE JOINT FOR MODULAR FURNITURE

Donald C. Hennick, 9547 Wallingford North, Seattle, Wash. 98103

Filed Mar. 19, 1984, Ser. No. 591,208
Int. Cl.[4] F16B *12/44*
U.S. Cl. 403—8 18 Claims



1. A joint for use in modular structures, such as furniture, grandstands and the like, having a generally horizontal portion, said joint comprising:

a generally vertical support member having generally vertical slot means dimensioned to receive a part of said horizontal portion;

a lock member having portions receivable into the slot means and positionable to be contiguous to said part of said horizontal portion when the joint is assembled;

a rod which extends through said horizontal portion, and which has a first end that engages the lock member and a second end that projects outwardly from a surface of said horizontal portion; and

releasable fastening means for engaging the second end of the rod to urge the lock member against interior wall portions of the slot means and pull the support member and said horizontal portion together to in turn secure the joint, said fastening means being adjustable for adjusting the tension in the rod and the tightness of the joint.

4,607,973

FASTENING ARRANGEMENT FOR RELEASABLY INTERCONNECTABLE MOUNTED AND MOUNTING MEMBERS, AND PROCESS FOR MAKING THE SAME

Rudolf Wilke, 4 Marsberger Strasse, 3548 Arolsen, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 347,881
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105217
Int. Cl.[4] B25G *3/00*; F16D *1/00*
U.S. Cl. 403—9 8 Claims

1. A fastening arrangement of releasably interconnectable mounted and mounting members, wherein

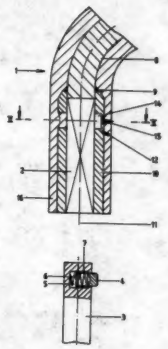
(a) said mounting and mounted members are components of a composite structure and have the form of, respectively, an underpart adapted to be affixed to a wall or like support and an upper part adapted to be secured to said underpart;

(b) said upper part having a peripheral side wall defining a receiving opening;

(c) said underpart being adapted to be accommodated substantially in its entirety within said receiving opening and carrying a plurality of transversely displaceable locking pins resiliently biased outwardly of the underpart into a projecting position;

(d) said upper part being provided within the confines of its receiving opening with a corresponding plurality of transverse bores which extend from the receiving opening to the exterior of the upper part and are located in a portion of said side wall corresponding to the location of said locking pins on said underpart for entry of the locking pins thereinto upon introduction of said underpart into said receiving opening;

(e) said transverse bores each having an inner section communicating at one end with the receiving opening, and an outer section communicating at one end with exterior of said upper part and at its other end with the other end of said inner section;



(f) said inner section of each transverse bore having a cross-section or diameter substantially corresponding to that of its respective locking pin; and

(g) said outer section of each transverse bore having a cross-section or diameter that is small relative to that of its respective inner section and provides a passage of limited noticeability for access of a thin tool into said transverse bore from the exterior of said upper part for forcing its respective locking pin from its respective inner section.

4,607,974

WAND AND WAND EXTENSION

Michael V. Brothers, and Bruce W. Schaeffer, both of Sturgis, Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 27, 1984, Ser. No. 583,671
Int. Cl.[4] F16D *1/00*
U.S. Cl. 403—24 7 Claims

1. A wand for adjusting window blinds, comprising:

a first wand section having means at one end for attachment to a window blind adjusting mechanism and a connection means at the other end; and

a second wand section having a connection means at one end for releasably and non-pivotably interconnecting with the connection means of the first wand section and for transmitting clockwise and counterclockwise rotation to said first wand section along the longitudinal axis thereof;

one of said connection means comprising a plurality of radial ribs, the other of said connection means comprising a plurality of fingers interengaging between said radial ribs;

said plurality of radial ribs comprises four longitudinally extending ribs connected together and projecting radially at right angles from a longitudinally extending central axis and said plurality of fingers comprises four fingers arranged at right angles and interengageable between said ribs.

4,607,975

FIXING DEVICE FOR A FISHING ROD

Kun N. Lo, No. 33, Hsiang Ho Road, Lie Lin Tzun, Tan Tzu Hsiang, Taichung Hsien, Taiwan

Filed Feb. 4, 1985, Ser. No. 697,634
Int. Cl.[4] A01K *87/02*
U.S. Cl. 403—24 **15 Claims**

1. A fixing device comprising:

a fixing piece adapted to be engaged onto an outer tube means in which an inner tube is slidably received;

a packing ring made of flexible material and fitted around said inner tube; and

a protecting ring disposed between said fixing piece and said packing ring, the protecting ring including a top wall and a side wall depending from an edge of the top wall, the top and side walls cooperating to define a chamber for receiving the packing ring, the packing ring being urged and deformed by the protecting ring in both axial and radial directions to grasp said inner tube when said fixing piece is engaged onto said outer tube means tightly so as to prevent the relative movement of said inner tube and said outer tube means.

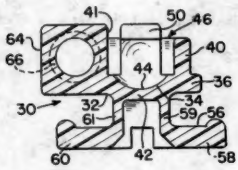
4,607,976

BALL SOCKET ASSEMBLY

Brian R. Peek, Steger, and Paul M. Sutenbach, Chicago, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 13, 1985, Ser. No. 744,361
Int. Cl.[4] F16C *11/00*; F16D *1/12*
U.S. Cl. 403—77 **7 Claims**

1. A ball socket assembly comprising a plastic molded housing, a ball socket integrally formed in said housing, said ball socket including a base member having spherical-shaped internal wall segment facing an opening in said housing, and a pair of resilient arm members integrally formed with said base segment and extending generally parallel to and equidstant from the axis through the center of said spherical shaped wall segment, each of said resilient arm members having a curved internal face surface which matches the curvature of said spherical-shaped wall segment and locking means for rigidly preventing outward flexing of said resilient arm members after a spherical ball has been installed into said ball socket a pedestal integrally formed downwardly from the bottom wall of said base member, said pedestal comprising a pair of oppositely extending elongate L-shaped feet for permitting said ball socket assembly to be slidingly mounted along a straight path, and an elongate rectangular block integrally formed with said plastic molded housing and having a threaded bore formed through said rectangular block in a parallel direction to said straight path.

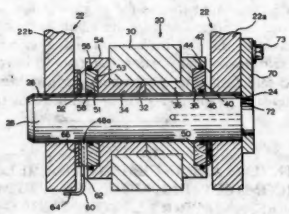


4,607,977

PIVOT JOINT

Edmund K. Varnelis, 1568 Trebor Rd., St. Joseph, Mich. 49085, and Robert L. Siewert, 1515 Moccasin Trail, Benton Harbor, Mich. 49022

Filed Aug. 5, 1985, Ser. No. 762,232
Int. Cl.[4] F16C *11/06*; F16D *1/12*
U.S. Cl. 403—154 **8 Claims**



1. A joint for connecting together two structural members of a vehicle for pivotal movement relative to each other, one of said structural members including a bifurcated portion having spaced apart parallel flanges, said flanges having coaxial openings therethrough, the other said structural member located in part between said parallel flanges and having a third opening therethrough coaxial with the other said openings, comprising,

a pin extending through all three of said openings,

a pair of bushings in said third opening and around said pin in dynamic contact with said pin,

each bushing having an axially extending shoulder portion projecting axially beyond the ends of said third opening respectively,

a pair of annular thrust plates housed within said shoulder portions respectively,

a pair of annular dynamic seals between said thrust plates and said shoulder portions respectively,

one of said thrust plates having a radially extending slot in the outer surface thereof, and

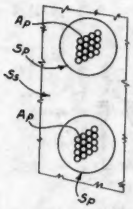
a weld bead on one flange of said first member located in said radially extending slot.

4,607,978

METHOD AND EQUIPMENT FOR IMPROVING HORIZONTAL MARKING STRIPS

Ludwig Eigenmann, P.O. Box 114, CH 6833 Vacallo, Italy

Filed Aug. 9, 1983, Ser. No. 521,731
Claims priority, application Italy, Aug. 23, 1982, 22934 A/82; Dec. 29, 1982, 25023 A/82; Jul. 6, 1983, 21961 A/83
Int. Cl.[4] E01C *23/16*
U.S. Cl. 404—73 9 Claims



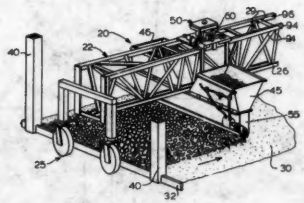
1. A method of improving horizontal road marking strips to ensure high capability of retroreflecting light and long optical service life of the horizontal road marking strips, comprising applying onto a road marking material retroreflective agglomerated platelets, each including individual retroreflective elements arranged in rows and interconnected at a distance less than the diameter of an individual element so that retro-reflective elements in a first row, exposed to the aggression of the incoming traffic, give a mechanical protection effect on the retroreflective elements in an interconnected second row, thereby insuring a longer optical life of said elements in a second row.

4,607,979

HYDRAULICALLY-POWERED ROCK SPREADER

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Filed Dec. 21, 1984, Ser. No. 685,244
Int. Cl.[4] E01C *19/20*
U.S. Cl. 404—110 3 Claims



1. A material spreader for spreading a uniform layer of relatively large size, hard, particulate material such as non-uniform pieces of rock over a lengthwise-extending, wet concrete or other defined surface, said spreader comprising:

(a) a bridge structure supported above and spanning the width of the concrete or other surface over which the rock is being spread and having supporting means adapting said bridge structure to be moved along the length of said surface, said bridge structure providing wheel tracking surfaces on opposite top side surfaces thereof;

(b) a support structure supported by wheels on said bridge structure and movable back and forth along an elevated path on said wheel tracking surfaces provided by said bridge structure;

(c) hopper means comprising a pair of hoppers mounted on opposite sides of said bridge structure and a dispenser box having a top portion integral with the bottoms of said hoppers and a bottom portion providing a dispensing slot, said hoppers being supported from and having open tops located below said support structure for storing material to be spread and dispensing such material through said slot as said hopper means and support structure move back and forth on said bridge structure;

(d) a gasoline engine mounted on said support structure and having a drive shaft powered by said engine;

(e) a hydraulic pump mounted on said support structure and coupled to said drive shaft;

(f) a plurality of hydraulic motors fluidly connected for being driven by pressurized fluid produced by said pump;

(g) a reservoir for storing hydraulic fluid utilized by said pump and motor;

(h) drive means on said support structure for driving said support structure on said bridge structure, said drive means including one or more of said hydraulic motors connected to drive one or more of said wheels;

(i) a dispensing cylinder extending for the length of and mounted below said slot, said dispensing cylinder having a drive connection to another of said motors for driving said dispensing cylinder to assist the flow of material through said slot during operation of said spreader, said dispensing cylinder being formed of metal and having raised spaced apart protuberances on the surface thereof providing an overall roughened surface thereon;

(j) a pair of vertically-disposed substantially flat plateformed gates extending for the length of said dispensing cylinder on opposite sides therof, said gates being mounted for pivoting outwardly and independently of each other about the upper edges thereof around horizontal axes located above said cylinder and on opposite sides of said slot;

(k) spring means attached to said gates and operative to allow each of said gates to independently pivot outwardly under spring tension when passing said material between said cylinder and a respective said gate in response to the size thereof;

(l) independently adjustable stop means supported on said dispenser box for each of said gates and adapted to limit inward pivoting of each of said gates; and

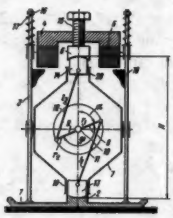
(m) control valve and conduit means including an operator-control member and conduit interconnecting said pump, motors, reservoir and valve means positioned by said control member to allow selective stopping and reversing of the direction of said motors dependent on the position of said control member whereby when said hopper means is driven in one direction on said bridge structure, said dispensing cylinder is driven in a corresponding direction and the gate on the side of said cylinder in the direction of travel of said hopper means is allowed to pivot in and out corresponding to the varying size of material being dispensed and wherein when said hopper means is moved in an opposite direction, said dispensing cylinder is driven in an opposite direction and said opposite gate is allowed to pivot in and out in correspondence with the size material being dispensed with said protuberances on said dispensing cylinder being effective to reduce the tendency of individual pieces of said material to jam between said cylinder and upper portions of said gates.

4,607,980

APPARATUS FOR COMPACTING SOIL, CONCRETE AND LIKE MATERIALS

Vladimir A. Shilkov; Andrei V. Shilkov; Petr D. Kuzmin, all of Leningrad; Vladimir S. Metrikin, Gorky; Vladimir A. Chumichev; Anatoly I. Borovtsev, both of Moscow, and Nikolai I. Dubenkov, Vladimir, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro "Stroimekhanizatsia", Osipenko, U.S.S.R.

Filed Dec. 6, 1984, Ser. No. 678,991
Int. Cl.[4] E01C *19/34*
U.S. Cl. 404—133 3 Claims



1. An apparatus for compacting soil, concrete, and other materials, said apparatus comprising:
a tamping shoe;
columns secured on said tamping shoe;
a reaction mass mounted on said columns and provided with hammers;
a casing mounted on said columns;
cranks fitted on a drive shaft and shifted in phase by a predetermined angle within said casing;
connecting rods coupled with said cranks;
hammer rams provided within said casing and facing upward and downward in opposite directions and moving within said casing in opposite directions under the force of said connecting rods;
at least one first anvil adapted to take up the impacts of at least one downward moving hammer ram and mounted on said tamping shoe;
second anvils adapted to take up the impacts of the hammers of the reaction mass and mounted on said columns; and
at least one third anvil adapted to take up the impacts of at least one upward moving hammer ram to move vertically and mounted on the reaction mass;
said hammer rams cooperating with said first anvil and said third anvil and being in a coaxial relationship with said first anvil and said third anvil.

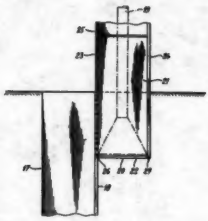
4,607,981

METHOD FOR CONSTRUCTING A SCREEN THAT OBSTRUCTS THE FLOW OF SUBSOIL WATER

Peter G. van Klinken, Oudenbosch, Netherlands, assignor to Stevin Construction Inc., Dover, Del.

Filed Feb. 8, 1983, Ser. No. 464,960
Claims priority, application Netherlands, Feb. 8, 1982, 8200466
Int. Cl.[4] E02D *19/12*
U.S. Cl. 405—52 4 Claims

1. A method of constructing an in-soil water-retention screen comprising at least two webs of supple film material positioned with a longitudinal side edge of a first said web adjacent a longitudinal side edge of a second said web, and a first profile member positioned along said longitudinal side edge of said first web; said first profile member being designed to slide within and cooperate with a second profile member positioned along said longitudinal side edge of said second web, said cooperating profiles having cross sections which are interlocked to resist separation in the direction perpendicular to said profiles and in the plane of said webs, said profiles being sufficiently small to allow insertion of a said profile and a said web together using a flushing lance, said method comprising:
(1) providing a supply roll of web;
(2) unrolling a portion of web from said supply roll and releasably connecting said unrolled web portion to the lower end of a flushing lance comprising downwardly directed water jets and having a width substantially equal to the width of said web;
(3) connecting at least a portion of a first profile member along a longitudinal side edge of said unrolled web portion while simultaneously moving said web and said connected



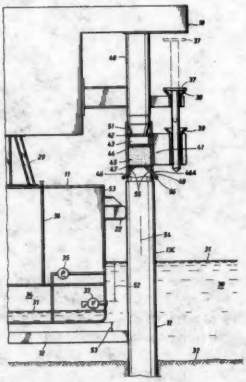
profile with said flushing lance from a first level downwardly into said soil to a desired depth by flushing away soil with said water jets, thereby introducing said first web in the soil;
(4) disconnecting said first web from said lance after reaching the desired depth and raising said lance to said first level; and
(5) repeating steps (1) to (4) with said second web to guide said second web with said second profile member attached thereto into the soil with the aid of the flushing lance, and, in so doing, guiding said second profile member into said already inserted first profile member.

4,607,982

METHOD AND APPARATUS FOR INSTALLATION OF AN OFFSHORE PLATFORM

Lee K. Brasted, Kingwood, and George L. Uppencamp, Spring, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 31, 1985, Ser. No. 696,819
Int. Cl.[4] E02B *17/08;* E02D *21/00, 25/00*
U.S. Cl. 405—204 3 Claims



1. Apparatus for use in lowering and connecting the lower end of downwardly-depending legs of an offshore platform structure to the upper end of upwardly-directed leg supports of a substructure, said connection means apparatus comprising;
a leg-receiving receptacle having an open top and a chamber

defined downwardly therein formed at the upper end of a plurality of said substructure leg supports,

closure means formed at the lower end of each of said receptacle chambers,

a selected mass of a particulate material positioned in the lower portion of each receptacle chamber,

drain means connected in fluid communication with the lower portion of said receptacle chamber of a size and location to allow a selective amount of said particulate material to be drained evenly from said receptacle chamber,

valve means in said drain means to control the draining of said particulate material from said receptacle chamber, and

a selected mass of resilient material means positioned in the upper portion of each receptacle chamber and carried by said particulate material.

4,607,983

METHOD OF CONSTRUCTING AN OFFSHORE TOWER STRUCTURE

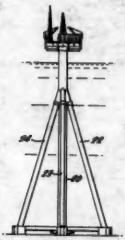
Jan Meek, Gouda; Maurice Uittenbogaard, AV Woerden, both of Netherlands, and Finn C. Michelsen, Kailua, Hi., assignors to Heerema Engineering Service BV, Leiden, Netherlands

Division of Ser. No. 606,964, May 4, 1984, Pat. No. 4,557,629, which is a continuation of Ser. No. 354,710, Mar. 4, 1982, abandoned. This application Jun. 25, 1985, Ser. No. 748,593

Claims priority, application United Kingdom, Mar. 4, 1981, 8106753

Int. Cl.[4] E02B *17/00;* **E02D** *23/02, 25/00*

U.S. Cl. 405—204 **7 Claims**



1. A method of counstructing an offshore tower structure having a base structure, a central enclosed tubular column formed with a plurality of downwardly and outwardly extending projections and a plurality of legs corresponding in number to the plurality of said projections, with guide means being interposed between the column and the legs for locating the legs in position relative to said column, said method including:

positioning the base structure on the seabed;

floating the column over the base structure;

lowering the column vertically downwardly into engagement with the base structure where it is laterally restrained yet slidably connected thereto;

floating the legs over said base structure;

lowering the legs vertically downwardly onto said base structure;

connecting the lower ends of the legs to said base structure for pivotal movement relative thereto;

swinging the legs towards the column until the legs are located in position relative to said column by the guide means immediately below the column projections;

lowering the column further until the column projections abut the upper ends of the legs; and

securing the upper ends of the legs to the column projections.

4,607,984

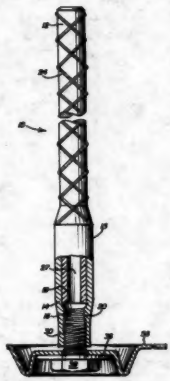
APPARATUS AND METHOD FOR MINE APPLICATION

Bruce A. Cassidy, Richmond, Ohio, assignor to Republic Corporation, Century City, Calif.

Filed Sep. 25, 1984, Ser. No. 654,129

Int. Cl.[4] E21D *20/02, 21/00;* **F16B** *33/04*

U.S. Cl. 405—261 **6 Claims**



1. An apparatus for anchoring a bolt in a rock formation comprising:

an elongated reinforcing bar, having first and second ends, adapted for use in a bore hole in said rock formation;

said reinforcing bar second end defining an orifice having first and second portions, said second portion being threaded, said threads defining an inside diameter, and said first portion housing a threadable sleeve having a smooth inner surface and defining an inner aperture, said orifice and said aperture being coaxial;

an elongated bolt having first and second ends, said first end being externally threaded to engage said orifice second portion and said second end having a bolt head and a roof support plate adjacent thereto;

said bolt first end threaded into and extending through said orifice second portion and abutting said threadable sleeve thereby preventing axial movement of said bolt upon application of torque beyond a predetermined point in said orifice and causing said reinforcing bar and said bolt to rotate together; and

said threadable sleeve being tapped by said bolt threaded first end upon application to said bolt of a torque in excess of a predetermined torque, the threads of said bolt cutting away grooves in said sleeve inner surface, thereby allowing relative rotation between said bolt and said bar to permit said bolt to tap into said sleeve and said roof support plate to be drawn adjacent the rock formation, said bolt being placed under tension in said bore hole.

4,607,985

BLOCK CONSTRUCTION FOR PREVENTING OUTFLOW OF BALLASTS

Takenobu Matsushita, Tokyo, Japan, assignor to Taizo Nozawa, Tokyo and Katsumasa Machii, Hiroshima, both of, Japan, part interest to each

Continuation of Ser. No. 418,383, Sep. 15, 1982, abandoned. This application May 13, 1985, Ser. No. 733,412

Int. Cl.[4] E02D *29/02*

U.S. Cl. 405—284 **4 Claims**

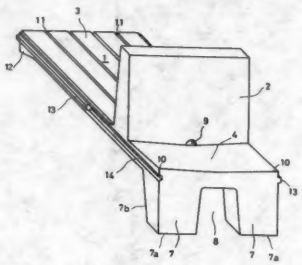
1. A block construction for preventing the outflow of ballast, comprising:

a generally horizontally extending slab body having a front

edge and a rear edge at respective laterally opposite ends thereof;

means, including a ballast-retaining wall extending longitudinally and vertically upward from said slab body at a location spaced from said front and rear edges, for retaining ballast on the laterally rearward side thereof; and

means, including a pair of spaced apart legs having horizontal flat bottom surfaces, extending downward from said rear edge of said slab for being buried in holes in a roadbed, for firmly fixing said slab relative to the ground, said ballast-retaining wall being laterally spaced from said legs



and being located closer to said rear edge than to said front edge;

said slab having a first upper surface forward of said ballast-retaining wall extending from said front edge to said ballast-retaining wall of sufficient lateral extend to provide a longitudinally extending walkway, and a second upper surface rearward of said ballast-retaining wall for supporting ballast thereon piled against said ballast-retaining wall forward of said legs;

the forwardly facing surfaces of said legs sloping rearwardly and downwardly in a single plane.

4,607,986

SHIELD SUPPORTS SUITABLE FOR USE IN MINES

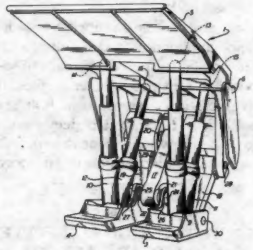
Stephen A. Brown, Cheltenham, England, assignor to Dowty Mining Equipment Limited, Tewkesbury, England

Filed Jul. 19, 1984, Ser. No. 632,542

Claims priority, application United Kingdom, Jul. 23, 1983, 8319887

Int. Cl.[4] E21D *17/02, 19/00*

U.S. Cl. 405—296 **7 Claims**



1. A shield support, suitable for use in mines, which comprises a floor-engaging structure including two sledge elements which are disposed side-by-side and which are spaced apart one from the other, a roof-engageable canopy, a shield mounted for pivotal movement with respect to the canopy, extendable and contractible prop means carried by said sledge elements and operable to adjust the height of said canopy, and a pivotal guide linkage for supporting said shield from said sledge elements and for providing in conjunction with the shield a torsion-resistant connection between those otherwise independent said sledge elements, said linkage including three links, each of which is at one end pivotally-connected to said shield, one of said links being at its other end pivotally-connected to one of said sledge elements, another of said links being at its other end pivotally-connected to the other of said sledge elements, and the third of said links being of substantial cross-section and being at its other end directly pivotally-connected to both said sledge elements, the connection of said third of said links to both said sledge elements forming the only means directly joining those elements together.

4,607,987

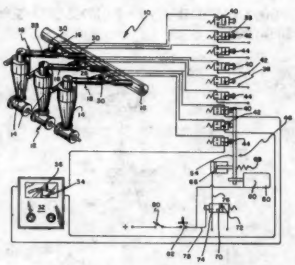
MULTIPLE LIFT PNEUMATIC CONVEYING AIR VELOCITY CONTROL APPARATUS AND METHOD FOR CONTROLLING THE PNEUMATIC VELOCITY IN A MULTIPLE LIFT PNEUMATIC CONVEYING AIR VELOCITY CONTROL APPARATUS

John E. Kice, Wichita, Kans., assignor to Kice Metal Products Co., Inc., Wichita, Kans.

Filed Nov. 26, 1984, Ser. No. 675,017

Int. Cl.[4] B65G *53/66*

U.S. Cl. 406—14 **10 Claims**



3. A pneumatic conveying air velocity control apparatus comprising at least one pneumatic lift including at least one cyclone means, at least one manifold means, at least one pneumatic conduit intercommunicating the cyclone means with the manifold means and having a structure defining a venturi with a venturi inlet side and a venturi throat;

at least one damper means pivotally connected within said at least one pneumatic conduit on said venturi inlet side:

at least one pneumatic actuator means engaged to said damper means for opening and closing same:

a controller means:

at least one set of a first, a second and a third 2-way valve means for each of said at least one pneumatic lift;

said first 2-way valve pneumatically communicating with said pneumatic actuator, and with said controller means;

said second 2-way valve pneumatically communicating with said venturi inlet side and said controller means and said third 2-way valve pneumatically communicating with said venturi throat and said controller means, for detecting the pneumatic flow rate through said pneumatic conduit;

a sequencer means for mechanically engaging only one set of 2-way valve means at any given time and having a valve plate means with a structure defining an aperture, a shaft means rotatably positioned through said aperture, and a cam means bound to the end of said shaft means in order to rotate therewith.

4,607,988

REVERSIBLE CUTTING BIT

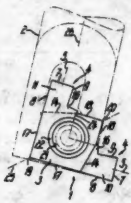
Franz Salm, Ettingen; Eduard Zängerle, Au, and Jean-Fracois Muriset, Kerzers, all of Switzerland, assignors to Herrli AG, Switzerland

Filed Dec. 5, 1984, Ser. No. 678,287

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344233

Int. Cl.[4] B23B *49/00*

U.S. Cl. 407—114 19 Claims



1. A reversible cutting bit for use in a cutting tool having a cutting bit holder with adjustment surfaces lying in three spatial planes and adapted for an identically oriented support of the cutting bit in reversed operation positions, said cutting bit comprising:

a plate-like body having parallel outer plate surfaces on opposite sides, two inside edge faces and two outside edge faces, said outside edge faces lying in planes at right angles to the outer plate surfaces and at an angle to each other,

said plate-like body having a plurality of projections protruding over said inside edge faces in the direction of said outside edge faces and positioned at an angle to each other,

each of said projections having an outside and an inside lateral surface, said outside lateral surface being an elongation of the corresponding outside edge face of said plate-like body and positioned in a plane at right angles to said outer plate surfaces of said plate-like body,

said projections having end faces, each forming a cutting edge on a corresponding side of the opposite sides of said plate-like body,

one of each of said outer plate surfaces of said outside edge faces and of said inside edge faces of said plate-like body forming bearing surfaces in the corresponding operation position of the bit.

4,607,989

MACHINE TOOL

Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Takaoka, Japan

Filed Jun. 18, 1985, Ser. No. 745,942

Claims priority, application Japan, Jun. 19, 1984, 59-90148[U]

Int. Cl.[4] B23B *31/04;* B23C *5/26*

U.S. Cl. 409—232 4 Claims

1. A machine tool comprising:

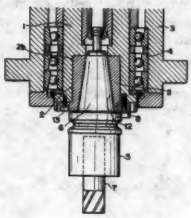
a machine tool body;

a spindle rotatably supported by the machine tool body, the spindle having at its lower end portion an opening-like supporting portion;

a ceramic sleeve detachably attached to the supporting portion of the spindle,

a tool holder having an inserting portion which is adapted to be attached into the ceramic sleeve;

a ceramic flange portion formed in one piece at a lower end of the ceramic sleeve, in such a manner that the ceramic flange portion extends radially from the ceramic sleeve along the lower portion of the spindle; and



means for fixing the ceramic flange portion of the ceramic sleeve onto the lower end portion of the spindle.

4,607,990

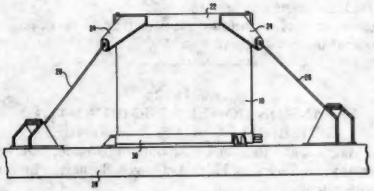
UNIPAK TIE-DOWN SYSTEM

Alfred G. Eggers, North Strabane Township, Washington County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 24, 1984, Ser. No. 664,449

Int. Cl.[4] B61D *3/16*

U.S. Cl. 410—2 3 Claims



1. An apparatus for holding waste material, suitable for handling, transporting, and disposal comprising:

an open cask for accepting the waste material;

a lid that mates with the open cask to close the cask;

studs fastened into the cask and passing through the lid;

means for securing the lid to the cask;

lifting lugs fastened onto the portion of the stud protruding through the lid; and

a hold-down ring with tie-down lugs for use in securing said cask during transport with said lifting lugs removed, said ring having cavities sized to accept protruding stud portions and lid securing means when placed over the lid but sized not to accept lifting lugs.

4,607,991

TIE-DOWN ANCHOR FOR TRUCK BED

David R. Porter, 827 E. Fountain, Mesa, Ariz. 85203

Filed Sep. 6, 1984, Ser. No. 647,688

Int. Cl.[4] B60R *9/00*

U.S. Cl. 410—110 3 Claims

1. A tie-down anchor for mounting in an opening in the top surface of a side wall of a truck bed comprising:

a mounting platform having a top surface,

a pair of elongated arms, one pivotally mounted at each end of said platform,

spring means mounted to extend between said arms to pivotally urge them away from each other,

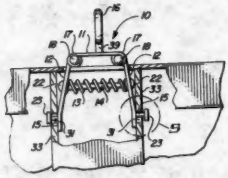
said spring means comprising a rod slidably extending between and through an opening in each of said arms, and a compression type coil spring mounted around said rod between said arms,

each end of said rod having a cap thereon for limiting the

movement of said arms away from each other under the bracing effect of said spring,

said arms being bent along their lengths so that end portions thereof extending substantially parallel to each other when the arms are in their extended positions under the influence of said spring means,

a pair of latching studs, one mounted on the end portion of each of said arms for extending through holes in the side walls of the truck bed to secure the anchor to the truck bed when the arms are extended under the influence of said spring means,



said pair of latching studs each comprising a stud extending outwardly of the outside surface of the associated arm a distance greater than the thickness of the side wall of the truck bed and having a head at the end thereof the under surface of which defines a plane surface which engages the outside surface of the side walls of the opening in the truck bed when in use, and

fastening means mounted on top surface of said platform to extend upwardly therefrom.

4,607,992

EXPANSION DOWEL ASSEMBLY WITH A SPHERICALLY SHAPED SPREADER

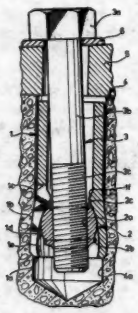
Bernd Mauritz, and Raimer Uhlig, both of Munich, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Sep. 28, 1984, Ser. No. 656,168

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335628

Int. Cl.⁴ F16B *13/06*

U.S. Cl. 411—45 **6 Claims**



1. An expansion dowel assembly comprises an axially elongated expansion sleeve having leading end and a trailing end with the leading end inserted first into a borehole into which said dowel assembly is to to anchored, said sleeve has an expansion region extending from the leading end toward the trailing end for a part of the axial length thereof, a spreader with a tapped bore is located within said expansion sleeve in the expansion region, and a threaded bolt positionable within said expansion sleeve and threadably engageable within the tapped bore in said spreader so that by drawing said spreader through said expansion sleeve toward the trailing end of said sleeve, the expansion region can be radially expanded, wherein the improvement comprises that said spreader has an exterior surface in contact with the interior of said expansion sleeve and the exterior surface of said spreader in contact with said sleeve is spherically shaped, said spreader positioned within said sleeve has a circumferential annular bulge extending outwardly from the exterior surface of said spreader with said bulge located in a plane perpendicular to the axis of said tapped bore within said spreader, and in the position of said spreader within said sleeve the end of said spreader closer to the trailing end of said sleeve is provided with a countersunk surface around said tapped bore.

4,607,993

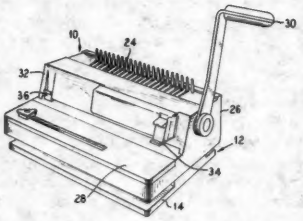
COMBINED PUNCH AND BINDING MACHINE WITH THICKNESS GAUGE AND BACK GAUGE PLATE ADJUSTMENT

Roger M. Scharer, Des Plaines, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Nov. 5, 1985, Ser. No. 795,077

Int. Cl.⁴ B42B *5/10*; B26D *5/08*

U.S. Cl. 412—40 **4 Claims**



1. A punch and binding machine which includes:

a frame;

means carried by said frame defining a plurality of punch receiving die openings;

a punch mechanism carried on said frame and including an adjustable back gauge plate for engaging an edge of material to be punched, said plate positioned rearwardly of said die openings, and said plate having a forwardly extending slide means for adjusting said plate relative to said die openings, and adjustment indicia carried on said slide;

cover means for covering said punch mechanism through which said adjustment slide extends and for alignment with said indicia on said slide; and

thickness gauge means carried on said cover for measuring the thickness of material to be punched and having indicia for indicating the measured thickness;

said thickness indicia on the gauge correlated to the adjustment indicia on the adjustment slide member so that the position of the back gauge plate is set relative to the measured thickness of material to be punched.

4,607,994

TRANSPORT ARRANGEMENT ESPECIALLY FOR LINING MATERIAL

Paul Jacobsson, Skärholmen, Sweden, assignor to Tellus Maskin AB, Vallentuna, Sweden

Filed May 9, 1983, Ser. No. 492,960

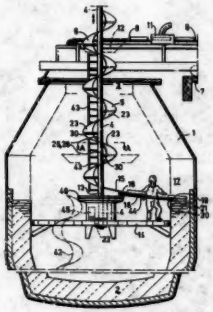
Claims priority, application Sweden, May 17, 1982, 8203095; Apr. 8, 1983, 8301965

Int. Cl.⁴ E04G *21/14*; F27D *1/16*

U.S. Cl. 414—10 **16 Claims**

1. An arrangement for the transport of lining materials, for example, shaped bricks and the like, for the lining of the inte-

rior walls of ladles, converters, blast furnaces or the like where the transport of the materials is intended to take place between a supply place, usually located outside the converter or corresponding apparatus, and a consumption place, for example, a bricklaying station adjacent an inner wall in the converter or corresponding apparatus, comprising: a vertically adjustable carrying device and a conveying device for substantially vertical transport of material transferred to the conveying device, and means for advancing to the consumption place material, which was transported down by said conveying device, and a work platform supported at least in part by said carrying device for vertical movement therewith, characterized in that said conveying device consists of a substantially helically shaped slither plate path (5) which is a chute, a slide or corresponding device, in itself substantially known per se, along which material supplied at an upper portion (6) of said path (5)



is intended to slide, said helical path (5) being vertically adjustable along and rotatable about a substantially vertical axis, preferably about a vertically arranged lance (4) or corresponding means constituting said carrying device, so that a lower portion of the path (5) located at a suitable height above the work platform (14), from which portion material is intended to be transferred to the consumption place (17), can be caused to assume an optional position in the circumferential direction of the converter (1) or corresponding apparatus, said means for advancing material to the consumption place (17) consisting of an end portion (15) of the path (5) and a transfer way (16), for example a roller way (16), which is connected to said end portion (15) and attached to said path (5), preferably at said end portion, for vertical and rotational movement therewith, and which extends between said end portion (15) and the consumption place (17).

4,607,995

STACKING AND COLLECTING APPARATUS

William D. Hodges, London, England, assignor to Machines Chambon S.A., Orleans, France

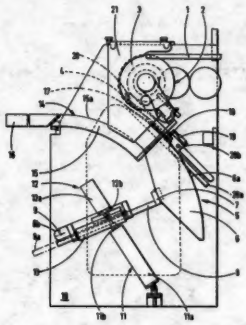
Filed Jun. 11, 1985, Ser. No. 743,725

Claims priority, application United Kingdom, Jun. 15, 1984, 8415359

Int. Cl.[4] B65H *31/30, 31/32*

U.S. Cl. 414—46 **25 Claims**

1. Apparatus for stacking and collecting labels, the apparatus comprising feed means for continuously feeding at least one stream of individual labels, a movable support assembly for supporting at least one stack of labels corresponding to said at least one stream fed thereto by the feed means, and a fixed support assembly for receiving said at least one stack of labels from the movable support assembly, the movable support assembly being movable relative to the fixed support assembly firstly to transfer said at least one stack of labels to the fixed support assembly, and secondly to push said at least one stack of labels off the fixed support assembly, wherein an intermediate support assembly is provided for supporting labels whilst



the movable support assembly pushes said at least one stack off the fixed support assembly.

4,607,996

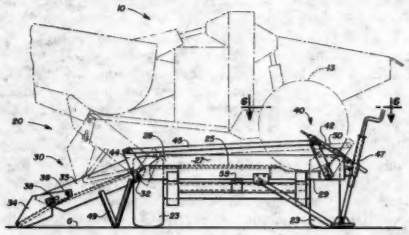
LATERAL TRANSPORT TRAILER

Earl E. Koch, Mohnton, Pa., assignor to New Holland Inc., New Holland, Pa.

Filed Dec. 24, 1984, Ser. No. 685,629

Int. Cl.[4] B65G *67/02*

U.S. Cl. 414—537 **4 Claims**



1. A trailer for transporting a wheeled harvester comprising:

a wheeled frame for mobile movement of said trailer over the ground along a direction of travel;

a platform supported by said frame at a position elevated above the ground;

ramp means pivotally connected to said platform and movable in a plane substantially perpendicular to said direction of travel between a ground engaging position and an elevated position, said ramp means permitting said wheeled harvester to be transported from the ground to said platform when in said ground engaging position, said ramp means including a pair of ramp members pivotally connected to said platform and movable in corresponding planes perpendicular to said direction of travel, each said ramp member supporting a corresponding wheel of said wheeled harvester; and

elevating means supported on said platform and connected with said ramp means to be engageable with said wheeled harvester to cause a movement of said ramp means from said ground engaging position to said elevated position when said wheeled harvester has been elevated onto said platform, said elevating means including an engaging member pivotally mounted on said platform and positioned to be engageable with the harvester to effect pivotal movement thereof, said elevating means further including a connecting link interconnecting said engaging

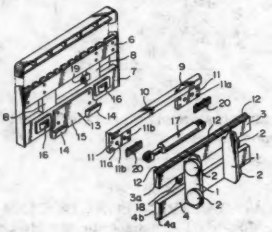
member and said ramp members to transfer pivotal movement from said engaging member to said ramp members to raise said ramp members from said ground engaging position to said elevated position.

4,607,997

SIDE SHIFTING ATTACHMENT FOR FORK LIFT TRUCKS

Masakazu Asano, Ohbu, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Aug. 29, 1984, Ser. No. 645,616
Claims priority, application Japan, Sep. 2, 1983, 58-137205[U]
Int. Cl.[4] B66F *9/14*
U.S. Cl. 414—667 **4 Claims**



1. In a fork lift truck having a lift bracket movable up and down on upright masts, and a pair of upper and lower finger bars extending transversely and attached to upper and lower spaced positions of the lift bracket, respectively, a side shifting attachment secured to the upper and lower finger bars for shiftably supporting thereon fork tines comprising: a transversely extending upper fork bar engageable with an upper end of said fork tines; a transversely extending lower fork bar vertically spaced from said upper fork bar and engageable with a lower end of said fork tines; upper shift bar means fixed to said upper fork bar and transversely slidably engaged with said upper finger bar via a transverse liner, said upper shift bar means including a plurality of mounting holes; a lower shift bar means fixed to said lower fork bar and transversely slidably engaged with said lower fork bar; a shift actuator arranged in front of said upper and lower finger bars for producing a transverse shift of said upper and lower fork bars along said upper and lower finger bars; slide guide means arranged between said lower fork bar and said lower finger bar for sliding said lower fork bar during the transverse shift of said upper and lower fork bars, and; slide pad means arranged between said upper fork bar and said upper finger bar for smoothly moving said upper fork bar during the transverse shift of said upper and lower fork bars, said slide pad means including a pair of transversely spaced slide plate members attached to said upper shift bar means and each having a plain face, respectively, in contact with a plain surface of said upper finger bar, and at least one mounting pin provided on a rear face of each slide plate member for removably securing said slide plate members in corresponding mounting holes of said upper shift bar means in a loose mounting arrangement.

4,607,998

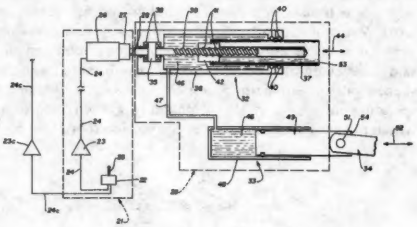
ELECTROMECHANICAL MANIPULATOR ASSEMBLY

Graham S. Hawkes, Oakland, Calif., assignor to Deep Ocean Engineering Incorporated, Oakland, Calif.

Filed Feb. 15, 1983, Ser. No. 466,606
Int. Cl.[4] B25J *13/00*
U.S. Cl. 414—735 **16 Claims**

1. An electromechanical manipulator assembly including electrically powered input means coupled by hydraulic circuit means to mechanical manipulator means, wherein the improvement in said manipulator assembly is comprised of:

said hydraulic circuit means including a master piston-cylinder assembly connected to said input means for receipt of input therefrom and directly hydraulically coupled by a fixed-volume, closed hydraulic circuit to a slave piston-cylinder assembly for direct and proportional displacement of said slave piston-cylinder assembly in response to displacement of said master piston-cylinder assembly, said slave piston-cylinder assembly includes an ambient pressure surface exposed to ambient fluid pressure of a fluid



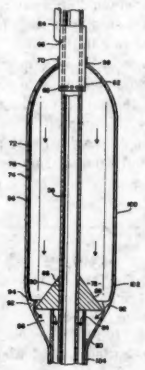
when said slave piston-cylinder assembly is submerged in the fluid to thereby pressurize hydraulic fluid in said closed hydraulic circuit in response to ambient fluid pressure against said surface to bias said slave piston-cylinder for slaved displacement in response to displacement of said master piston-cylinder assembly, and said slave piston-cylinder assembly being coupled to said manipulator means for displacement of a portion thereof.

4,607,999

DE-WATERING PUMP

William C. Lane, Star Route Box 750, Aberdeen, Wash. 98520

Filed Jun. 14, 1982, Ser. No. 387,769
Int. Cl.[4] F04F *1/06, 3/00*
U.S. Cl. 417—118 **2 Claims**



1. A pump for the driving of liquid from a hole comprising:

A line;

An expandable sack surrounding said line;

A means of introducing air pressure into said expandable sack;

A conical member with a bore therethrough, said bore being of the same diameter as the diameter of said line, and said conical member positioned at a point within the expandable sack;

A hollow cylinder affixed to the bottom of said cone and of slightly larger diameter than the line, said hollow cylinder

having ports therethrough and said hollow cylinder securely being affixed to the bottom of said expandable sack;

A means of preventing air pressure flow through the ports of the hollow cylinder until the expandable sack has expanded to meet the contour of the inner walls of the hole from which liquid is being pumped.

4,608,000

AIR PUMP

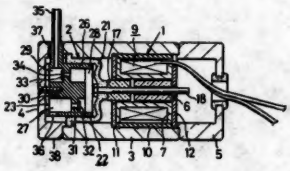
Kazutoshi Tominaga, Higashi Osakashi, Japan, assignor to Kabushiki Kaisha Tominaga Jyushikogyosho, Higashi Osakashi, Japan

Filed Dec. 7, 1984, Ser. No. 679,309

Claims priority, application Japan, Dec. 29, 1983, 58-248321

Int. Cl.⁴ F04B *17/04*

U.S. Cl. 417—413 **7 Claims**



1. An airpump for a household aquarium, said airpump comprising:

(a) an electromagnet including a stationary inner iron core having an axial bore therethrough, a coil surrounding said stationary inner iron core, an outer iron core surrounding said coil and a pair of end iron cores disposed in contacting relationship with and at opposite ends of said outer iron core, said end iron cores having centrally located apertures therein axially aligned with the bore of said inner iron core and said inner iron core being in contact with a first one of said end iron cores;

(b) a bellows unit including a diaphragm attached at its center to a permanent magnet, said permanent magnet having extending axially therefrom a rod which passes through the openings in said end iron cores and which is movably received in the axial bore of said stationary inner iron core so that said permanent magnet is positioned adjacent to the second one of said end iron cores;

(c) a pump unit having a suction check valve and a discharge check valve, said pump unit being operatively connected to said diaphragm in an axial arrangement therewith, said air pump being activated as said permanent magnet is vibrated in an axial direction without contacting said electromagnet, said vibration being effected by alternating magnetic polar changes occurring in said inner iron core and said second one of said end iron cores; and

(d) a casing for housing said electromagnet, said diaphragm and said pump unit.

4,608,001

SCROLL TYPE FLUID MACHINE WITH ANGULAR ADJUSTMENT MEANS

Tamio Sugimoto; Yoshimitsu Fukazawa, and Kunio Yamaguchi, all of Biwajima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Mar. 18, 1985, Ser. No. 713,192

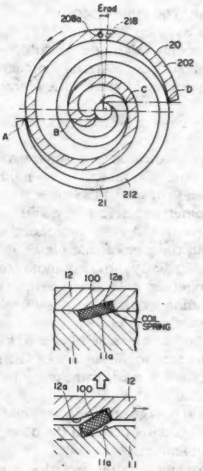
Claims priority, application Japan, Mar. 21, 1984, 59-52276; Aug. 28, 1984, 59-129322[U]

Int. Cl.⁴ F01C *1/04, 19/00, 21/00;* **B23P** *15/00*

U.S. Cl. 418—55 **6 Claims**

1. A scroll type fluid machine wherein there are engaged stator scroll means and rotary scroll means in intermeshing relationship with each other, each having a lateral plate surface, a scroll blade portion projecting in the axial direction from the lateral plate surface in such a manner that said rotary scroll means may move in solar revolving motion with respect to said stator scroll means, a cup-like member fixed to and covering said stator scroll means, a front end plate fixed to said cup-like member, a main shaft journalled on said front end plate and engaged with said rotary scroll means to move it in solar revolving motion, a rotation blocking mechanism for restricting the rotary motion of said rotary scroll means and incorporated between said rotary scroll means and said front end plate, so that fluid may operatively be sucked into and delivered out of the fluid machine with a differential pressure produced therein in continued variation, characterized in that, in order to shift the angular phase relationship between said rotary scroll means and said stator scroll means in the direction of rotation of said rotary scroll means by a selected angle from initial contact of the scroll blade portions to be determined by initial wear of said scroll blade portions of said rotary and stator scroll means, indexing holes shifted for said selected angle are provided in said stator and rotary scroll means, and alignment means for securing said front end plate and cup-like member together with alignment of said indexing holes.

3. A scroll type fluid machine wherein there are engaged stator scroll means and rotary scroll means in intermeshing

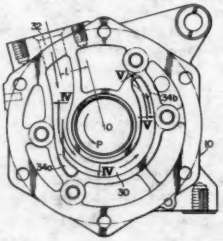


relationship with each other, each having a lateral plate surface, a scroll blade portion projecting in the axial direction from the lateral plate surface in such a manner that said rotary scroll means may move in solar revolving motion with respect to said stator scroll means, a cup-like member fixed to and covering said stator scroll means, a front end plate fixed to said cup-like member, a main shaft journalled on said front end plate and engaged with said rotary scroll means to move it in solar revolving motion, a rotation blocking mechanism for restricting the rotary motion of said rotary scroll means and incorporated between said rotary scroll means and said front end plate, so that fluid may operatively be sucked into and delivered out of the fluid machine with a differential pressure produced therein in continued variation, characterized in that opposed surfaces of said front end plate and said cup-like member of the scroll type fluid machine are formed with retaining groove means so that a space is defined therebetween when installed together, resilient means inserted in said space in position to allow said front end plate to adjustably shift in rotating motion relatively with said cup-like member during assembly thereof, and that said front end plate and said cup-like member are finally secured together after an adjustment for initial wear was made accordingly therebeween.

4,608,002
ROTARY VANE COMPRESSOR WITH HOOK-LIKE SUCTION PASSAGE

Isao Hayase, and Atsuo Kishi, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,944
Claims priority, application Japan, Feb. 8, 1982, 57-17520
Int. Cl.⁴ F04C *18/00*
U.S. Cl. 418—86 **4 Claims**



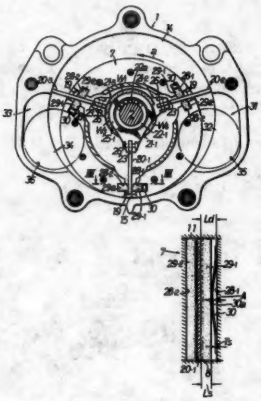
1. A movable vane type compressor comprising.
a cylindrical rotor adapted to be rotatably driven;
a cam cylinder accommodating said rotor and having an inner peripheral surface material contacting the outer peripheral surface of said rotor at a plurality of portons thereof;
a pair of side plates closing both open axial ends of said cam cylinder;
a plurality of compression chambers separated from adjacent ones by said portions of contact between the outer peripheral surface of said rotor and the inner peripheral surface of said cam cylinder and defined by said outer peripheral surface of said rotor, the inner peripheral surface of said cam cylinder and the pair of side plates;
a plurality of vanes radially movably mounted on said rotor and rotatable together with said rotor, with their outer ends held in sliding contact with said inner peripheral surface of said cam cylinder;
a side cover attached to one side of one of said side plates;
a suction passage formed in the surface of said side cover and adapted to introduce a refrigerant gas into said compression chambers; and
a plurality of suction ports each opened at one end thereof to said suction passage and opened at the other end thereof to a compression chamber;
wherein the improvement comprises that said suction passage extends in a hook-like form from one inlet end leading from the refrigerant suction hole of said compressor to the other end which is closed in a direction conforming with the direction of rotation of said rotor, and wherein the hook-like suction passage is formed to gradually decrease the cross-sectional area thereof from the inlet end towards the closed end thereof.

4,608,003
SEAL ARRANGEMENT FOR VANE TYPE AIR PUMPS

Isao Fujii, and Shin Narasaka, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1984, Ser. No. 657,684
Claims priority, application Japan, Oct. 12, 1983, 58-190474
Int. Cl.⁴ F04C *18/00, 27/00*
U.S. Cl. 418—137 **3 Claims**

1. A seal arrangement for a vane type pump wherein vanes extend through slots in a rotor with grooves on both inner sides of each slot and elongated sealing elements are positioned in each groove with a leaf spring in compression positioned behind one sealing element in a groove to bias that sealing element toward the vane and in turn the vane toward the other sealing element for sealing engagement by both sealing elements with the vane, the improvement comprising the pair of facing grooves at each slot having bottom surfaces spaced a distance such that the sum of the thickness of the two sealing elements, the vane and the leaf spring in the direction between said two groove bottom surfaces is less than said distance by an amount equal to or less than 0.6 mm, and wherein said leaf

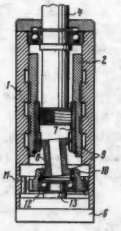


spring is of a width slightly less than said groove bottom surface to allow said leaf spring to be flattened against said groove bottom surface and is bowed in the middle to contact the sealing element with the ends flatly contacting the groove bottom surface.

4,608,004
POWER STEERING ASSEMBLY

Valery Y. Obidin; Olga A. Zueva, both of Moscow; Vladimir M. Inochkin, Volzhsk; Andrei V. Zhavoronkov; Leonid K. Voinich, both of Moscow; Jury V. Polushin, Volzhsk; Petr A. Zakhodyakin, Moskovskaya; Zinaida I. Rodionova, Moscow; Nikolai N. Judchits, Minsk; Vladimir V. Belyanin, Volzhsk; Andrei A. Yarkin; Vyacheslav N. Kalmykov, both of Moscow; Mikhail M. Ageechkin, Moskovskava, and Sergei M. Arakelyants, Moscow, all of U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie Stroitelnogo I Dorozhnogo Mashinostroenia, Moscow, U.S.S.R.

Continuation of Ser. No. 558,462, Dec. 6, 1983, abandoned. This application Nov. 6, 1985, Ser. No. 794,978
Int. Cl.⁴ F04C *2/00;* F16K *31/44;* F16D *31/02*
U.S. Cl. 418—206 **8 Claims**



1. A power steering assembly comprising: a housing of a fluid distributor having an inside bore portion; a control valve of said fluid distributor disposed inside said bore portion of said housing for axial movement therewithin without rotation, said control valve having a central bore; a steering shaft having a

threaded end provided thereon, said threaded end of said steering shaft positioned within said central bore of said control valve; a servohydraulic actuator including a satellite gear and a crown gear, said satellite gear engaged with said crown gear for planetary movement relative thereto, said satellite gear including a central bore having a bearing secured therein; a spline shaft having outer splines on the two ends thereof, one end of said spline shaft drivingly engaged with said satellite gear of said servohydraulic actuator; said steering shaft, servohydraulic actuator and control valve being kinematically interconnected for said control valve to be capable of axial displacement within said housing without rotation when said steering shaft is turned; said kinematic linkage including a sleeve having a thread engageable with said threaded end of said steering shaft, said sleeve being accommodated inside said central bore of said control valve for rotation relative thereto and being fixed relative thereto in the axial direction, one end of said sleeve being connected to said steering shaft by way of said thread and the other end of said sleeve being drivingly engaged with the other end of said spline shaft; and an eccentric shaft journalled in said bearing of said satellite gear and connected to said servohydraulic actuator.

4,608,005

CLAMPING DEVICE

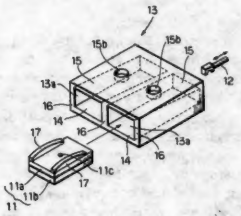
Keizo Hayashi, Nagoya, and Hitoshi Hasegawa, Ichinomiya, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugaigun, Japan

Filed Oct. 25, 1984, Ser. No. 664,687

Claims priority, application Japan, Oct. 27, 1983, 58-201432

Int. Cl.⁴ B29C *45/64*

U.S. Cl. 425—192 R **3 Claims**



1. A clamping device for a mold, said mold including at least two sections which can be brought together to define a mold cavity which may be opened along a parting line defined where said sections adjoin when said sections are brought together, this parting line extending perimetrically of the mold, each of said at least two sections having an external, back surface located distally of said parting line, said back surfaces of said at least two sections being generally opposed to one another such that they face in generally axially opposite directions, with said parting line making a circuit of the mold intermediate such back surfaces,

said clamping device comprising:

base surface means arranged to have said mold supported thereon with one of said mold back surfaces in frictional engagement therewith for linear, reversible sliding movement therealong longitudinally along a path;

clamping surface means disposed in spaced but confronting relation with said base surface means, so that a clamping chamber is defined between said base surface means and said clamping surface means, said clamping chamber being aligned with and at least partially enclosing said path;

securing means for securing said clamping surface means in fixed relation to said base surface means so that in a forwards direction along said path the distance between said clamping surface means and said base surface means gradually diminishes, and in a rearwards direction along said path, gradually enlarges;

a spacer means constructed and arranged to be mounted to the other of said mold back surfaces, this spacer means including a convexly humped back surface oriented when said spacer means is in place on said mold, for frictional engagement with said clamping surface means as said mold is slid along said path on said base surface means;

said clamping surface means being held so spaced and oriented relative to said base surface means by said securing means, that:

(a) a clamping chamber entrance is formed at one end of said clamping surface means, at which entrance the distance between said clamping surface means and said base surface means is greater than the combined thickness of said mold and said spacer means, and

(b) at a site intermediate the longitudinal extent of said clamping surface means, the distance between said clamping surface means and said base surface means is at least slightly less than the combined thickness of said mold and said spacer means; and

means for urging said mold with said spacer means mounted thereto, through said clamping chamber entrance, into said clamping chamber, along said path in sliding engagement with said base surface means until said mold with said spacer means mounted thereto has reached said intermediate site, whereby said mold is held clamped-closed by said spacer means and said mold is wedged together between said base surface means and said clamping surface means, and thereafter for urging said mold with said spacer means mounted thereto along said path until said mold with said spacer means mounted thereto is no longer wedged between said base surface means and said clamping surface means.

4,608,006

TUNNEL CHEESE PRESS WITH REMOVABLE EXTERNAL PRESS CYLINDERS

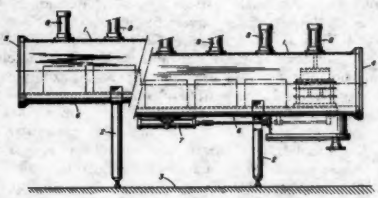
Jan Rijpkema, and Gustaaf A. Uittenbogaart, both of Sneek, Netherlands, assignors to Esmil Hubert B.V., Netherlands

Filed Apr. 12, 1984, Ser. No. 599,693

Claims priority, application Netherlands, Apr. 21, 1983, 8301401

Int. Cl.⁴ B28B *5/00*

U.S. Cl. 425—347 **2 Claims**



1. Cheese press for pressing cheese in a plurality of cheese moulds having movable covers through which pressure is applied to the cheese, the press comprising

(a) a tunnel having bounding walls providing roof, floor and sides of the tunnel defining a tunnel chamber, the bounding walls being smooth and having no internal or external reinforcing ribs, and the tunnel chamber having a mould support surface adapted to receive the cheese moulds spaced apart thereon,

(b) conveyor means for moving the cheese moulds, spaced apart from each other, intermittently over said support surface longitudinally along the tunnel chamber,

(c) a plurality of presses arranged spaced apart longitudinally along the tunnel, each press comprising an actuating

cylinder mounted on the roof of the tunnel outside the tunnel chamber and a pressing member arranged inside the tunnel chamber and actuated by said cylinder so as to engage and press down the cover of a said cheese mould located temporarily beneath the press, said actuating cylinder having a circumferentially threaded rod axially extending therefrom and an annular flange removably attached to said actuating cylinder and said roof and circumscribing said threaded rod, said pressing member having an axially extending shaft extending therefrom, said shaft having an internally threaded cavity into which said rod extending from said actuating cylinder is screwed, said shaft extending from said pressing member having a transverse hole therethrough between said pressing member and said internally threaded cavity, said hole being placed below the interior of the roof a distance greater than the thickness of the roof when the actuating cylinder and said pressing member are assembled.

4,608,007

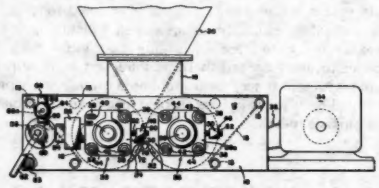
OAT CRIMPER

Errol A. Wood, 3038 Lupine Dr., Bay City, Mich. 48706

Continuation of Ser. No. 494,352, May 13, 1983. This application Jul. 15, 1985, Ser. No. 754,657

Int. Cl.[4] A23P *1/00*

U.S. Cl. 425—363 **3 Claims**



1. In a precision oat crimper for crimping oats without dehulling them, and for ancillarily cracking corn: a frame; a pair of cylindrical crimping rollers of equal diameter mounted for rotation about generally horizontally spaced parallel axes lying in a generally horizontal plane, the rollers defining a nip between said rollers, each of said rollers having a cylindrical peripheral surface that is broken by a plurality of first uniformly circumferentially spaced, axially extending linear grooves that substantially cover the peripheral surface, each groove having a uniform width of substantially 1/16th of an inch and a uniform depth of substantially 0.020 of an inch, and one of said rollers having an additional second axially extending linear groove in the peripheral surface of said one of said rollers, said second axially extending linear groove having a width of substantially $\frac{3}{8}$ of an inch and of a depth of substantially 0.015 inches; drive means for driving said rollers about their axes in counterrotation at equal peripheral speeds to feed oats or corn downwardly between said rollers; a hopper supported on said frame at a level to feed the oats or corn downwardly to the nip between the rollers; axially spaced apart pairs of bearings on said frame, said bearings rotatably supporting ends of each of said rollers, each of the bearings of one pair of bearings having a slide connection with said frame being supported for sliding movement on said frame in a direction parallel to the generally horizontal plane in which said axes lie; a rigid follower slide rigidly fixed to each side of each of the bearings of said each pair of bearings and projecting from said one side in an outboard direction away from said nip; a shaft means extending parallel to said axes and being journaled by said frame outboard of said follower slides; a pair of rigid eccentric cams on said shaft means, said cam each having an eccentric portion in direct surface to surface contact with said follower slides; and means connected with said shaft means for manually revolving said shaft means to cause the eccentric portion of each cam in contact with the follower slides to positively move said slides and positively move said one pair of bearings an increment that corresponds to each increment of movement of said eccentric portions, thereby moving one roller to a position of minimum spacing for oats from a second, more spaced, position for cracking of corn, wherein the follower slides and bearings are locked in said positions by said eccentric portions and are movable only with simultaneous rotation of said shaft means.

4,608,008

PARTS DISCHARGE CONVEYOR FOR INJECTION MOLDING MACHINE

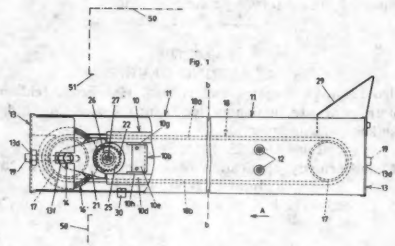
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,730

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1984, 3408459; Aug. 16, 1984, 3430032

Int. Cl.[4] B29F *1/14*

U.S. Cl. 425—542 **12 Claims**



1. A conveyor assembly adapted for use as a parts discharge conveyor in the machine base of an injection molding machine, the conveyor assembly comprising in combination:

an elongated, generally horizontally oriented conveyor frame having a centrally located core portion formed of at least one longitudinal frame member extending in the direction of conveyance;

an endless conveyor belt looping around the core portion of the conveyor frame, the conveyor belt having an upper belt run moving above and being supported by said core portion and a lower belt run moving below said core portion;

a belt-reversing driven belt drum oriented transversely to the conveyor frame and supported by the conveyor frame in the vicinity of one of its longitudinal extremities;

a belt-reversing idling belt drum oriented parallel to the driven belt drum and supported by the conveyor frame in the vicinity of the other one of its longitudinal extremities;

a non-rotating drum shaft supporting the driven belt drum by means of bearings which are arranged in the vicinity of the axial extremities of the drum shaft, the drum shaft having its axial extremities vertically supported and horizontally guided in the conveyor frame in such a way that the drum shaft is displaceable relative to the conveyor frame in the longitudinal direction of said frame;

belt tensioning means supported by the conveyor frame and operable to forcibly displace the drum shaft in relation to the conveyor frame so as to change the longitudinal distance between the driven belt drum and the idling belt drum for belt tension adjustments;

a spur gear arranged on one extremity of the driven belt drum and rotationally connected thereto;

a drive motor having a housing and a drive shaft, the axis of the drive shaft being oriented parallel to the axis of the driven belt drum, the drive shaft carrying a drive pinion in meshing engagement with said spur gear on the driven belt drum, the drive motor being located longitudinally

between the two belt-reversing drums and vertically between the upper and lower runs of the conveyor belt; and

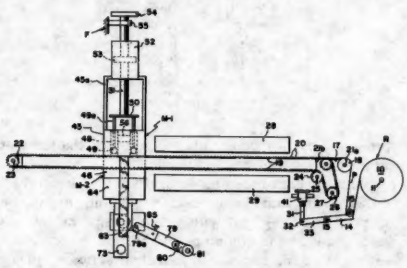
a supporting arm forming a bearing portion and a supporting flange on opposite ends of the arm, the bearing portion engaging the drum shaft between the spur-gear-carrying extremity of the driven belt drum and the associated extremity of the drum shaft, the supporting flange being attached to the housing of the drive motor, thereby securing the drive motor to the drum shaft.

4,608,009

THERMOFORMING EQUIPMENT FOR DIFFERENTIAL PRESSURE FORMING PRODUCTS IN THERMOPLASTIC MATERIAL

Robert C. Whiteside, Harrison, and Albert W. Arends, Gladwin, both of Mich., assignors to John Brown Inc., Beaverton, Mich.

Filed May 23, 1984, Ser. No. 613,864
Int. Cl.[4] B29C *51/36, 51/44*
U.S. Cl. 425—590 **13 Claims**



1. A differential pressure, thermoforming machine for molding articles in thermoplastic material comprising:

a. a frame;

b. a mold station incorporated in said frame, said mold station including a female mold mechanism with cavity forming means and an opposed mold mechanism;

c. a longitudinally extending, web advancing mechanism for indexing a plastic web, in which products are to be formed, between said mold mechanisms;

d. means for relatively moving said female and opposed mold mechanisms between mold open and mold closed positions on opposite sides of said plastic web;

e. a roll stand upstream from said mold station for supporting a roll of the plastic web in a position aligned longitudinally with said mold station such that a supply of the web can be unwound from the roll and fed to the web advancing mechanism;

f. heater elements disposed between the roll stand and mold station for heating the web to a moldable state;

g. a dancer arm assembly movable in an oscillating path angularly to the longitudinal extent of said advancing mechanism and said web to pull a section of said web from the roll such as to form a loop of predetermined extent and then release it for movement in indexed increments to the mold station;

h. means mounting said dancer arm assembly for swinging movement about a generally horizontal axis extending transversely to the web;

i. a crank link having a first end connected to the dancer arm assembly for moving said dancer arm assembly in an oscillating path;

j. a drive crank pivotally connected to said link oscillatable through substantially half an arc of revolution for moving said crank link through part of a revolution wherein said crank link drives said dancer arm assembly first at a gradually accelerating speed, then at increased speed, and finally at a gradually decelerating speed, when said dancer arm assembly is moved both in a direction to release the web to the advancing mechanism and then away from the web to pull a further increment of web from the roll; and

k. drive means for moving said drive crank in correlation with said web advancing mechanism.

3. A differential pressure, thermoforming machine for molding articles in thermoplastic material comprising:

a. a frame;

b. a mold station incorporated in said frame, said mold station including a female mold mechanism with cavity forming means and an opposed mold mechanism;

c. a longitudinally extending, web advancing mechanism for indexing a plastic web in which products are to be formed between said mold mmechanisms;

d. means for relatively moving said female and said opposed mold mechanisms between open and closed positions on opposite sides of said plastic web;

e. severing knife means around said cavity forming means cooperable with a final increment of said relative movement to dispose said mechanism in a closed position to sever the products formed from the web;

f. said means for relatively moving said mold mechanisms including a drive gear for causing relative movement to dispose said mold mechanisms in a forming position, and a final most-closed position in which severing of the articles by said severing knife means is accomplished;

g. a ejector pin mechanism operable after severing is accomplished and there has been relative movement of said mold mechanisms toward open position to eject the product from the cavity forming means; and

h. pusher means connected to be operated by said relative movement of one of said mold mechanisms to push the ejected product in a direction to clear the mold station.

4. A thermoforming machine for molding articles in thermoplastic material comprising:

a. a frame;

b. a mold station incorporated in said frame, said mold station including a mold assembly comprising a female mold mechanism with cavity forming means, and an opposed mold mechanism;

c. a web advancing mechanism for disposing a plastic web, in which products are to be formed, between said mold mechanisms;

d. means for relatively moving said female and said opposed mold mechanisms between open and closed positions on opposite sides of said plastic web;

e. said means for relatively moving said female and said opposed mold mechanisms including expandible and contractible toggle links connected between said frame and one of said mold mechanisms, and drive means incorporating a motion transfer mechanism for relatively expanding and contracting said toggle links operable to expand said toggle links and move said one mold mechanism toward the other mold mechanism to a first forming position, and then to expand said toggle links a final increment to move said one mold mechanism a final increment toward the other mold mechanism to a severing position;

f. severing knife means carried by said mold assembly around said cavity forming means cooperable with said final increment of expansion to sever the products formed from the web;

g. said motion transfer mechanism including relatively repositionable, toggle link expanding, coupled parts operative in one relative position to transfer the motion of said drive means to cause expansion of said toggle links to move said one mold mechanism to said first forming position and then to cause further expansion of said toggle links to move said one mold mechanism to said severing position; said repositionable toggle link expanding, coupled parts being operative in a second relative position to move said one mold mechanism to said first forming position and to disable the said further expansion of said toggle links necessary to reach severing position; and

h. position changing mechanism actuable for repositioning said parts between said first and second relative positions.

12. A thermoforming machine for molding articles in thermoplastic material comprising:

a. a frame;

b. a mold station incorporated in said frame, said mold station including a mold assembly comprising a female mold mechanism with cavity forming means, and an opposed mold mechanism;

c. a mechanism for disposing a plastic web, in which products are to be formed, between said mold mechanisms;

d. means for relatively moving said female and said opposed mold mechanisms between open and closed positions on opposite sides of said plastic web;

e. said means for relatively moving said female and said opposed mold mechanisms including expandible and contractible, pivotally coupled toggle links connected between said frame and one of said mold mechanisms, and drive means incorporating a motion transfer mechanism for relatively expanding and contracting said toggle links operable to expand said toggle links and move said one mold mechanism toward the other mold mechanism to a first forming position, and then to expand said toggle links a final increment to move said one mold mechanism a final increment toward the other mold mechanism to severing position;

f. severing knife means carried by said mold assembly around said cavity forming means cooperable with said final increment of expansion to sever the products formed from the web;

g. said motion transfer mechanism including a revolvable pin connecting said toggle links which includes an eccentric portion rotatably received by one of said coupled toggle links such that revolving movement of said eccentric portion in one direction causes further expansion of said toggle links, coupled with a connecting rod connected with said drive means to transfer the motion of said drive means to first cause expansion of said toggle links to move said one mold mechanism to said first forming position and then to cause further expansion of said toggle links to move said one mold mechanism to said severing position via rotation of said pin.

4,608,010

DEVICE FOR ADJUSTING THE VERTICAL POSITION OF WICK FOR OIL BURNER

Kazuharu Nakamura, Nagoya, and Yutaka Nakanishi, Kounan, both of Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Nov. 27, 1984, Ser. No. 675,365

Claims priority, application Japan, Nov. 28, 1983, 58-183199[U]

Int. Cl.⁴ F23N *5/24*

U.S. Cl. 431—88 **8 Claims**

1. A device for adjusting the vertical position of a wick for an oil burner comprising:

a wick operating shaft rotated to vertically move said wick;

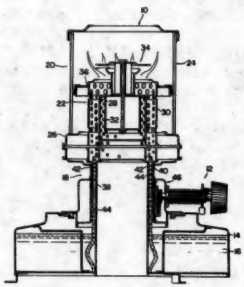
a shaft actuating means for actuating said wick operating shaft, said shaft actuating means including a knob mounted on one end of said wick operating shaft so as to be slidable on said wick operating shaft in the axial direction thereof;

a gear means loosely fitted on said wick operating shaft, said gear means having an extension means extending therefrom toward said shaft actuating means;

a return spring means interposed between said gear means and a burner body to act on said gear means, said return spring means being wound up at an ordinary state;

a stopper means adapted to be stationary at an ordinary state so that it is engaged with said gear means by force of another spring means to keep said return spring means at the wound-up state and prevent said gear means from being rotated by the force of said wound-up return spring means, and also adapted, when it is actuated, to be released from the engagement with said gear means so that said wound-up return spring means is released to rotate said wick operating shaft to lower said wick to the fire-extinguishing position;

an engagement means provided on said wick operating shaft which is adapted to pressingly engage with said extension means of said gear means to wind up said return spring means when said wick operating shaft is rotated through said shaft actuating means at the state that said return spring means is not wound up;



a forcing means for constantly forcing said shaft actuating means toward said gear means; and

a regulating means mounted on said knob to be moved together with said knob, said regulating means being adapted to be engaged with said extension means of said gear means at the minimum combustion position of said wick to stop the rotation of said shaft actuating means in the fire-extinguishing direction and released from the engagement with said extension means to allow said shaft actuating means to be rotated in the fire-extinguishing direction when it is pulled against said forcing means.

4,608,011

CANDLE APPARATUS

Todd M. Comstock, P.O. Box 1671, Cotuit, Mass. 02635

Filed Apr. 27, 1984, Ser. No. 604,896

Int. Cl.⁴ F23D *3/18*

U.S. Cl. 431—324 **7 Claims**

1. A candle apparatus comprising;

a base having means defining a base opening formed at least in part by a peripheral wall,

a canister for containing a liquid that is to be burned,
said canister having cap means with a passage therethrough for receiving a wick which is adapted to extend into the liquid and also extend at least partially out of the canister,
said canister having a base adapted to be received in said base opening,
and a shell which is adapted to extend over said canister and base peripheral wall and having an opening defined in the top thereof so as to leave said cap means and wick exposed,
said base including a base member and integral platform extending upwardly from said base member, said platform being of a smaller diameter than said base member,
said peripheral wall being an annular wall that extends upwardly from said platform to define said base opening,
said base having, outwardly of the platform, a substantially flat and continuously annular shell resting surface,
said shell, about its bottom annular edge, resting upon the base flat surface, extending below the lowermost part of the canister and covering the platform, annular wall and canister.

4,608,012

GAS BURNER

Charles F. Cooper, Malvern, England, assignor to Morgan Thermic Limited, Worcestershire, England

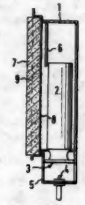
PCT No. PCT/GB83/00282, § 371 Date Jul. 3, 1984, § 102(e) Date Jul. 3, 1984, PCT Pub. No. WO84/01992, PCT Pub. Date May 24, 1984

PCT Filed Nov. 8, 1983, Ser. No. 629,727

Claims priority, application United Kingdom, Nov. 11, 1982, 8232281

Int. Cl.⁴ F23D *14/12*

U.S. Cl. 431—328 **4 Claims**



1. A self-aerating radiant gas burner assembly comprising a box base mixing chamber having an air inlet into which is directed a gas injector jet to induce flow of air through the inlet, the chamber being surmounted by a radiant burner element of ceramic foam material, the bore diameter of the gas injector jet being between 0.5 and 2.0 mm inclusive, the nominal porosity of the ceramic foam material being between 15 and 40 pores per linear 25 mm inclusive, the thickness of the burner foam material being between 8 and 30 mm inclusive and the dimensions within these ranges being selected for a specified gas and pressure range with the relationship that the lower the gas pressure the larger the jet size.

4,608,013

ULTRASONIC ATOMIZING BURNER

Gerhard Gaysert, Esslingen, and Dieter Gotz, Kirchheim, both of Fed. Rep. of Germany, assignors to Die Firma J. Eberspächer, Fed. Rep. of Germany

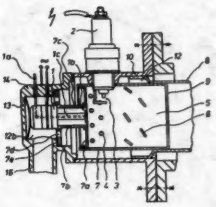
Filed Nov. 28, 1984, Ser. No. 675,940

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343617

Int. Cl.⁴ F23C *11/04*

U.S. Cl. 431—1 **16 Claims**

1. An ultrasonic atomizing burner for smaller heating apparatus particularly in mobile spaces, such as motor vehicles, comprising an atomizer having fuel inlet being equipped with an atomizer discharge plate, means skirting said plate defining a combustion air flow space for 1% at most of the combustion air amount, said skirting means including a cylindrical combustion chamber having forward discharge end with a flame baffle, a heating gas outlet tube connected to said discharge



end for axial flow, said combustion chamber having an ignition zone which is provided with wall bores for admitting primary air, a radially extending high voltage spark plug in said combustion chamber, said combustion chamber having a burnout zone which is provided with wall slots for admitting secondary air downstream of said primary air.

4,608,014

COILER-FURNACE UNIT

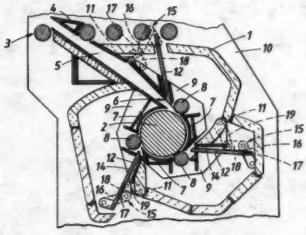
Rudolf Buchegger, St. Florian, and Franz Hirschmanner, Leonding, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 6, 1985, Ser. No. 742,034

Claims priority, application Austria, Jun. 18, 1984, 1970/84

Int. Cl.⁴ F27B *9/28*; C21D *9/52*; F27D *7/00, 23/00*

U.S. Cl. 432—59 **10 Claims**



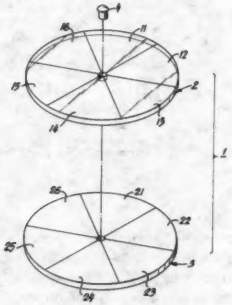
1. In a coiler-furnace unit comprising
a heat insulating housing,
a heatable coiler mandrel extending in said housing, and
strip guiding means disposed in said housing around said mandrel and adapted to guide a strip to be coiled on, and heated by said mandrel, said strip guiding means comprising a plurality of pressure applying rollers for urging said strip against said mandrel and cylindrical guide shoes angularly spaced apart around said mandrel, said rollers and shoes being engageable with said strip coiled around said mandrel and retractable from said mandrel to define an annular clearance with said coiled strip,
wherein the improvement comprises heat insulating shielding means adapted to be moved into and out of said annular clearance.

4,608,015

METHOD FOR SELECTING THE COLORATION OF A BONDING COMPOSITE FOR A DISCOLORED TOOTH

Irwin E. Smigel, 635 Madison Ave., New York, N.Y. 10022

Filed Jul. 16, 1984, Ser. No. 630,964
Int. Cl.[4] A61C *19/10*
U.S. Cl. 433—26 3 Claims



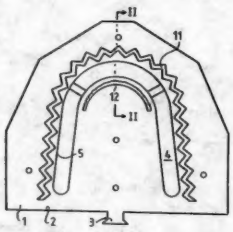
1. A method for selecting the coloration of a bonding composite adapted for being applied to a discolored tooth to neutralize the discoloration of the tooth, said method comprising selecting one of a plurality of different colorations which most closely matches the discoloration of a tooth to be bonded, superimposing on the selected coloration a plurality of transparent regions each of a coloration corresponding to composite material adapted for being bonded onto a tooth, and selecting one of said transparent regions which when superposed on said selected coloration corresponding to the discolored tooth most closely neutralizes said selected coloration.

4,608,016

DENTAL MODEL IN CONJUNCTION WITH A BASE PLATE FOR MAKING A DENTAL MODEL

Manfred Zeiser, 7141 Schwieberdingen, Fed. Rep. of Germany

Filed Jan. 17, 1984, Ser. No. 571,516
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301615; May 27, 1983, 3319263; Jun. 3, 1983, 3320050
Int. Cl.[4] A61C *19/00*
U.S. Cl. 433—74 45 Claims



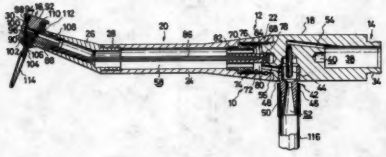
1. A dental device for making teeth prothesis portions such as cast fillings, crowns, bridges, dental protheses or the like, comprising in combination a prefabricated base plate; a dental positive tooth impression having tooth stumps and made of a hardenable model material; said tooth stumps being releasably securable on said base plate; and guide means for guiding at least one tooth stump on said base plate, said guide means including at least one guiding wall portion formed on said base plate integrally therewith, said wall portion producing a plurality of respective guiding surfaces immediately on said tooth stump during the hardening of the material of said tooth stumps when the base plate is set on the tooth impression, said base plate being formed with a perforation having side walls, the side walls of said perforation constituting said guiding wall portion and producing said guiding surfaces on said tooth stump, said base plate having a base surface and being formed with a ridge extended outwardly from said base surface and being integral with said base plate, said ridge following an arched path of a dental arch orientation and being inserted into said impression approximately centrally of a tooth stump, said ridge forming a further wall portion also producing said guide surfaces, said perforation at least partially also following an arched path of a dental arch orientation and being radially spaced from said ridge so that the side walls of said perforation and said further wall portion form extensive guide surfaces along the dental arch, said base plate further including at least one lateral projection outwardly extended therefrom and at a distance from said ridge, said projection having an inner face perpendicular to said base plate and being integral with the base plate, said projection also producing said guiding surfaces on said tooth stump during hardening of the model material.

4,608,017

ENDODONTIC IRRIGATING INSTRUMENT

Tsuyoshi Sadohara, Yokohama, Japan, assignor to Micron Co., Ltd., Tokyo, Japan

Filed May 16, 1984, Ser. No. 610,687
Claims priority, application Japan, May 20, 1983, 58-88951; Aug. 1, 1983, 58-140932
Int. Cl.[4] A61C *5/02*
U.S. Cl. 433—81 12 Claims



1. An endodontic irrigating instrument for irrigating a root canal of a tooth, which comprises:

a handpiece having a proximal end and a distal end, said proximal end having an inlet for a compressed air and an inlet for an irrigating liquid under pressure and being so formed as to be coupled with a multiple-channel hose extending from a dental unit;

a suction pump of the airjet type incorporated with said handpiece at the region adjacent said proximal end thereof, said suction pump having an air nozzle and and exhaust port;

air passage means for supplying a flow of compressed air from said air inlet to said nozzle to create a zone of partial vacuum in said pump;

a hollow aspiration needle mounted at an end thereof to said distal end of the handpiece, the other end thereof having an outer diameter substantially smaller than the inner diameter of the root canal to be irrigated;

suction passage means for connecting said zone of partial vacuum with said aspiration needle to suck the irrigating liquid therein and to discharge it toward said exhaust port;

a liquid ejection nozzle provided at said distal end of the handpiece adjacent said aspiration needle for supplying the irrigating liquid along said aspiration needle;

liquid passage means for supplying the irrigating liquid under pressure from said liquid inlet to said ejection nozzle; and

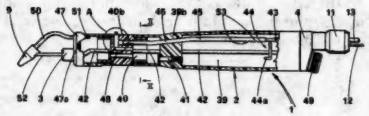
valve means for directing the compressed air to flow in the reverse direction through said suction passage toward said aspiration needle to permit backwashing of the aspiration needle.

4,608,018

APPARATUS FOR CLEANING IN PARTICULAR TEETH

Luigi Ghedini, Via Iussi, 43, 40068 S.Lazzaro Di Savena (BO); Rubbini Claudio, Via Galeazza, 9, 40132 Bologna, and Grillini Mauro, Via Piave, 7, 40068 S.Lazzaro Di Savena (BO), all of Italy

Filed Feb. 21, 1985, Ser. No. 703,729
Claims priority, application Italy, Apr. 30, 1984, 3445 A/84; Oct. 12, 1984, 3602 A/84
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—88 9 Claims



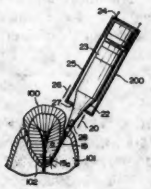
1. An apparatus for cleaning teeth with water, air and a dental cleaning powder comprising a handgrip, a multiple nozzle, a water supply means connected at one end to said nozzle and at said other end adapted to be connected to a source of pressurized water, said handgrip defining a powder chamber and at least one mixing chamber, means to supply pressurized air to said powder chamber, means to supply pressurized air and powder to said mixing chamber, and means to connect said mixing chamber to said multiple nozzle.

4,608,019

TOOL FOR EXODONTIA

Junichiro Kumabe, Tokyo, and Masaru Kumabe, 1-1, Ise 4-Chome, Kofu-shi, Yamanashi 400, both of Japan, assignors to Masaru Kumabe, Yamanashi, Japan

PCT No. PCT/JP83/00161, § 371 Date Jan. 16, 1984, § 102(e) Date Jan. 16, 1984, PCT Pub. No. WO83/04175, PCT Pub. Date Dec. 8, 1983
PCT Filed May 26, 1983, Ser. No. 573,911
Claims priority, application Japan, May 27, 1982, 57-88917
Int. Cl.[4] A61C *1/07, 3/08*
U.S. Cl. 433—118 6 Claims



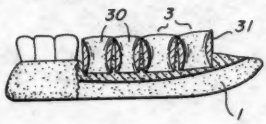
1. A dental tool for extracting a tooth which is secured to an alveolar bone through a pericementum, comprising a cylindrical housing, an acoustic transducer disposed within the housing and opertive to be driven from a source of a high frequency power which is arranged externally of the housing for producing vibrational energy of a predetermined frequency and a predetermined amplitude, a vibrating member having one end thereof connected to the acoustic transducer, and a blade attached to the other end of the vibrating member in a replaceable manner, the blade having an edge which is disposed externally of the housing and having a thickness which is substantially less than the thickness of the pericementum, the acoustic transducer having an oscillating frequency higher than the natural frequency of the tooth, the acoustic transducer exciting the blade through the vibrating member so that an amplitude of oscillation as measured at the edge of the blade is equal to or less than 15 micrometers.

4,608,020

METHOD OF MAKING REMOVABLE DENTURES

Kalman Laszlo, 18/2 Marseille Street, Kiriat Sprinzak, Haifa, Israel

Filed May 18, 1984, Ser. No. 611,989
Int. Cl.[4] A61C *11/00*
U.S. Cl. 433—213 5 Claims



1. A method of manufacturing an artificial denture by implanting lateral tubular teeth in the upper or the lower denture, the method comprising producing a baseplate for the upper and/or lower denture to serve as patterns for casting of the dentures; fastening by means of wax or an equivalent a full set of artificial teeth to the baseplate of one of said dentures; fastening by means of wax or an equivalent to the baseplate of the other of said dentures a predetermined number of artificial frontal teeth and a predetermined number of lateral teeth, said lateral teeth having an outer surface which is anatomically correct and being hollow; placing the baseplates into respective upper and lower jaws of an articulator and adjusting the position of the lateral teeth in the base plates so that they correspond with the lateral teeth of the opposite denture and so that each tooth forms at least one solid contact point with the teeth of the opposite denture; adjusting said articulator so as to leave a space between the cuspids and allowing the wax to harden; after hardening of the wax filling the hollow spaces of said lateral teeth with wax to overflow; moving said articulator so as to imitate mastication, whereby the wax protruding out of the lateral teeth is removed until the upper wax surface is smoothed; removing said dentures from said articulator and placing said dentures into the mouth of the intended user, allowing the intended user to make masticating motions for removing superfluous wax until the respective contact points come into actual contact; roughening the smoothed upper surfaces of the wax fillings in said lateral teeth into the form of fissures corresponding to natural teeth; removing the wax by melting, and filling the thus created cavity with a plastic material in liquid state; and curing the plastic material.

4,608,021

METHOD AND APPARATUS FOR DENTAL RESTORATION USING LIGHT CURABLE RESTORATIVES

Ronald A. Barrett, 4616 S. Green Acres Ct., Metairie, La. 70003

Filed Aug. 19, 1985, Ser. No. 766,939
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—229 8 Claims

1. A device for expanding a matrix band outwardly from a vertical opening of a tooth cavitation during filling of the cavitation with light curable plastic restorative compositions, said device comprising:

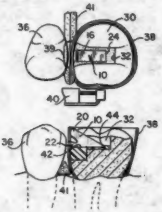
means including opposed surfaces intersecting each other at an acute angle for defining first and second arms converging at a pointed edge providing a common end for both said arms;

means for defining an abutment surface at the end of said first arm opposite from said pointed edge; and

means for defining a camming surface at the end of said second arm opposite from said pointed edge, the length of said second arm between said pointed edge and said camming surface being greater by a predetermined increment

of length than the length of said first arm between said pointed edge and said abutment surface;

whereby placement of said first arm in the tooth cavitation with said abutment surface against the matrix band positions said pointed edge at the location of a pivot step from which said second arm, when positioned in the cavitation with said camming surface against the matrix band, may operate as a camming strut to force the matrix band outwardly.



4,608,022

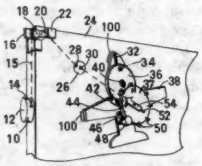
AIR AND SEA NAVIGATIONAL INSTRUMENT SIMULATION AND INSTRUCTIONAL AID

Richard C. Bellofatto, 19 Springdale Ave., Saugus, Mass. 01906, assignor to Richard C. Bellofatto, Saugus, Mass.

Filed May 23, 1984, Ser. No. 613,294

Int. Cl.[4] G09B *9/02*

U.S. Cl. 434—243 **18 Claims**



1. A classroom training aid for air and sea navigational instrument simulation and instruction comprising:

a hand-held model simulating an air or sea vessel movable by hand and mountable primarily by a magnetic means on a vertical surface, over the entire area of which vertical surface the model may be moved and secured in any direction and orientation to simulate actual routes of travel of the vessel;

at least one simulated navigational instrument mounted on the model appearing and acting correspondingly to the appearance and action of the actual navigational instrument on an air or sea vessel, which instrument comprises a compass rose oriented to indicate the position of the model and the indicator means found in the actual instrument wherein the model rotates around the compass rose as in the actual vessel;

an automatic gravitational means for controlling the simulated instrument of the model, which gravitational means in no way interferes with the movement and orientation of the model over the vertical surface;

wherein the automatic gravitational means for controlling the simulated instrument function of the model is a simulated Automatic Direction Finder (ADF) or Radio Direction Finder (RDF) comprising a spindle protruding from an outer surface of the model, rotatably mounted on the spindle a compass rose disc; an opening through the central axis of the spindle and through the body of the model, through which opening an indicator shaft is rotatably secured; at an outer end of which indicator shaft a pointer means is secured to rotate with the shaft; at an inner end of which indicator shaft a rigid orthogonal extension of the shaft protrudes in the direction of the pointer; and attached to the shaft extension a transparent line leading to a simulated Non Directional Beacon (NDB) or Radio Beacon (RB) secured to the vertical surface by a magnetic means, wherein the NDB/RB has a low-friction means of looping the line through the NDB/RB; an edge-mounted low-friction looping means of diverting the line from the NDB/RB to an edge of the vertical surface; and a weight secured to the end of the line which maintains the line in a taut condition so that the pointer always points to the NDB/RB regardless of the orientation and position of the model, and the weight is held clear of the vertical surface by the diverting means.

4,608,023

WATER SKI

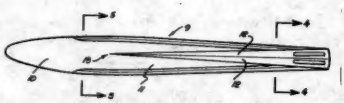
Frederick W. Williams, Gateshead, Australia, assignor to Ski-Ace Pty. Limited, Sydney, Australia

Filed Jun. 7, 1984, Ser. No. 617,956

Claims priority, application Australia, Jul. 27, 1983, PG0506

Int. Cl.[4] A63C *15/00*

U.S. Cl. 441—68 **9 Claims**



8. A water ski characterised in that:

(a) the underface of the ski has a pair of similar grooves or "tunnels" formed in it and extending from the trailing end of said underface to a single point in that underface ahead of the mid-point of its length but short of its leading end;

(b) said tunnels are arcuate concavities whereof the breadth and depth progressively increase in the direction towards said trailing end;

(c) two blade-like fins fixed relatively to said underface extend substantially longitudinally thereof and respectively from the trailing end portions of said tunnels; and

(d) said tunnels each extending substantially half of the way across said trailing end of the water ski, and the outer edges of both of said tunnels converging substantially to said single point.

4,608,024

BOOK WITH PUPPET

Joel B. Skolnick, 600 5th St., Brooklyn, N.Y. 11215

Division of Ser. No. 310,983, Oct. 13, 1981, Pat. No. 4,508,515. This application Feb. 11, 1985, Ser. No. 688,869

Int. Cl.[4] A63H *33/38*

U.S. Cl. 446—148 **8 Claims**

1. A book comprising:

first and second covers, each having at least an upper edge and inside surface;

at least one page disposed between said inside surfaces of said first and second covers, said at least one page having a continuous surface without any breaks therein;

a flexible, hollow puppet having a hollow interior; and

means for securing said puppet to one of said inside surfaces near said upper edge;

wherein said puppet includes an opening through which a user can introduce their entire hand while said puppet is secured to near said upper edge, said puppet being extendable above said one of said inside surfaces upper edge, and foldable onto said inside surface of one of said covers so that it is concealable when said book is closed.

4,608,025

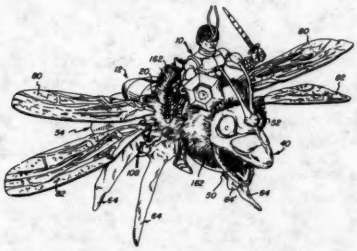
GLOVE PUPPET FIGURE ASSEMBLY WITH ARTICULATED HEAD COMPONENTS

Francis R. Amici, Northford; Hans S. Berger, Plainville; Domenic G. Mercurio, Elmwood; John P. McNett, Farmington, and Pietro Piazza, Prospect, all of Conn., assignors to Coleco Industries, Inc., West Hartford, Conn.

Filed Feb. 11, 1985, Ser. No. 700,502

Int. Cl.[4] A63H *3/28, 3/14*

U.S. Cl. 446—298 **16 Claims**



1. A glove puppet figure assembly comprised of:

a puppet figure including a body portion and a head portion, said head portion comprising at least one component that is movable relative to said body portion;

a glove member separate from said figure and adapted to receive the hand of the operator, said glove member having a portion attached to said body portion of said puppet figure, and having at least one finger portion defined therein movable independently of the remainder of said glove member and operatively connected to said one component of said head portion; and

rigid holding means on said body portion, separate from said glove member, for preveing substantial movement relative to the hand of the operator, whereyb said one component can be articulated by finger-actuated movement of said finger portion of said glove member, while said body portion is maintained by said holding means substantially stationary on the operator's hand.

4,608,026

FIGURE WHEREIN MANIPULATION OF ONE LIMB CAUSES MOTION OF ANOTHER

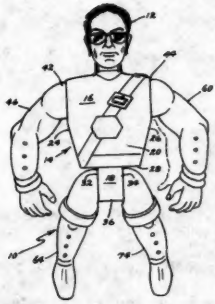
Jean M. Newton, Park Hills, Ky., and William N. Smith, Batavia, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.

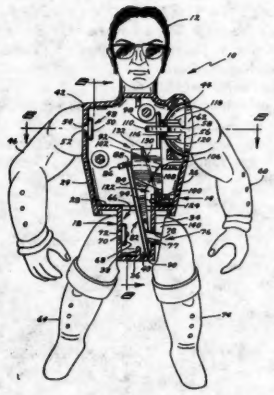
Filed Feb. 8, 1985, Ser. No. 699,621

Int. Cl.[4] A63H *3/20*

U.S. Cl. 446—330 **10 Claims**

1. A toy action figure comprising hollow upper and lower torsos, first and second legs, first means mounting said first leg to said lower torso, second means mounting said second leg to said lower torso for rocking movement toward and away from said first leg, first and second arms, third means mounting said first arm to said upper torso, fourth means mounting said second arm to said upper torso for swinging movement relative thereto about a generally vertical axis, said second leg and said second arm being on the same side of said figure and a motion-converting mechanism connected to said second mounting means and to said fourth mounting means for converting the rocking movement of said second leg to the swinging movement of said second arm, said motion-converting mechanism





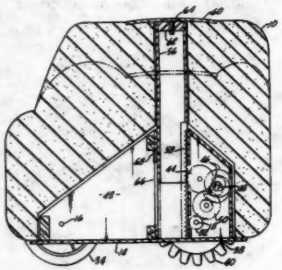
including an actuating lever connected to said second leg adjacent one end and having an angled cam edge adjacent its other end, a transmission lever movably mounted in said figure having one end disposed for rocking movement, a pin adjacent its other end and an intermediate cam follower edge acted upon by said angled cam edge, and a lever arm on said second arm having a slot therein, said pin extending into said slot to cause said second arm to swing about the said generally vertical axis upon the carrying out of said rocking movement by said second leg.

4,608,027

SOFT PROPELLABLE TOY

Reuben B. Klamer, 969 Hilgard Ave., Los Angeles, Calif. 90024, and Donald Greenwood, 3117 Lakeshore Dr., Longmowt, Colo. 80501

Filed Jun. 6, 1983, Ser. No. 501,536
Int. Cl.[4] A63H *29/00*
U.S. Cl. 446—457 13 Claims



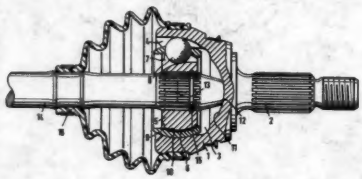
1. A soft, easily propellable toy, comprising:
(a) a body having an exterior of soft, compressible, resilient material;
(b) transportation means attached to said body for moving the toy; and
(c) conversion means attached to said body for converting the expansion of said compressible body material when said body is compressed and then released into rotational motion and communicating said rotational motion to said transportation means of the toy.

4,608,028

ROTARY CONSTANT VELOCITY UNIVERSAL JOINT

Hans-Heinrich Welschof, Rodenbach, and Edgar Dries, Rodgau, both of Fed. Rep. of Germany, assignors to Lohr & Bromkamp GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 639,602, Aug. 9, 1984, abandoned, which is a continuation of Ser. No. 538,976, Oct. 4, 1983, abandoned, which is a continuation of Ser. No. 359,435, Mar. 18, 1982, abandoned. This application Nov. 4, 1985, Ser. No. 794,954
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114290
Int. Cl.[4] F16D *3/23*
U.S. Cl. 464—145 5 Claims



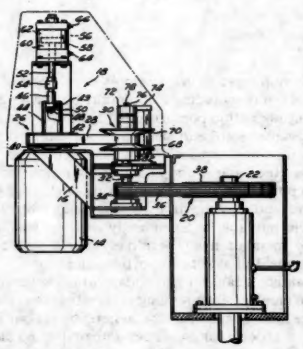
1. A rotary constant velocity fixed universal joint assembly comprising:
an outer joint member defining a spherical hollow space therein;
an inner joint member arranged within said hollow space;
a drive shaft nonrotatively connected with said inner joint member;
torque transmission means operatively interposed between said inner and outer joint members;
grooves formed respectively within each of said members having said torque transmission means engaged therein;
cage means arranged radially between said inner and said outer joint members, said cage means being arranged to receive in supporting engagement therein said torque transmission means;
said cage means including inner wall means defining a hollow space therein within which said inner joint member is received and a spherical outer face held within said spherical hollow space defined within said outer joint member;
said inner wall means of said cage means and said inner joint member being arranged in spaced relationship relative to each other;
a stop face defined in said spherical hollow space formed within said outer joint member; and
a supporting face formed with at least one of said inner joint member and said drive shaft located on the side thereof facing said stop face and arranged for cooperating engagement therewith;
said stop face and said supporting face abutting against each other to limit relative movement therebetween in one direction, with said grooves, said torque transmission means, said cage means and said outer joint member being formed to interact with each other so as to limit relative movement between said stop face and said supporting face in the opposite direction thereby to prevent relative axial movement between said inner joint member and said outer joint member.

4,608,029

CONTROL FOR SLURRY PROCESSING SYSTEM

John J. Corrigan, Garden Grove, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 427,162, Sep. 29, 1982, abandoned. This application Nov. 1, 1982, Ser. No. 438,416
Int. Cl.[4] F16H *11/06*
U.S. Cl. 474—11 27 Claims



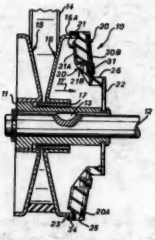
1. A method of controlling the speed of a dispersing or milling rotor in an industrial milling or dispersing operation comprising:
providing a chamber for holding material to be milled or dispersed and a milling or dispersing rotor located therein;
providing a motor;
transmitting torque from the motor to the rotor by means of an adjustable pulley combination;
controlling the speed of the rotor by controlling the position of the adjustable pulley combination by means of fluid pressure;
applying said fluid pressure in a manner to obtain a desired rotor speed; and
automatically moving said adjustable pulley combination to its slow speed position when said motor is shut off.

4,608,030

CENTRIFUGALLY OPERATED VARIABLE SPEED DRIVE PULLEY

Jacques Thirion deBriel, Levallois-Perret, France, assignor to Valeo, Paris, France

Filed Dec. 26, 1984, Ser. No. 686,485
Claims priority, application France, Dec. 28, 1983, 83 20939
Int. Cl.[4] F16H *55/56, 11/06*
U.S. Cl. 474—13 16 Claims



1. Centrifugally operated variable speed drive pulley comprising:

a hub aligned with a rotation axis,

two annular flanges around said hub in face-to-face relationship and adapted to receive a transmission belt, at least one of said flanges being a mobile flange adapted to slide along said hub,

a transverse bearing member mounted on said hub,

a diaphragm spring disposed between said mobile flange and said transverse bearing member in the axial sense, adapted to flex in such a way as to control sliding movement of said mobile flange along said hub,

a plurality of flyweights carried by said diaphragm spring, and

a mass of molded material applied to said diaphragm spring in which said flyweights are at least partially embedded.

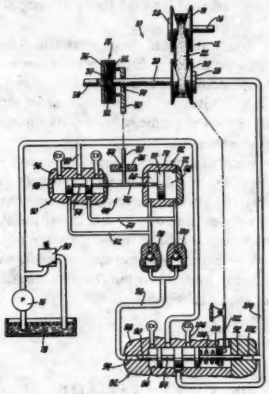
4,608,031

CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Hamid Vahabzadeh, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 23, 1985, Ser. No. 737,288
Int. Cl.[4] F16H *11/06*
U.S. Cl. 474—17 3 Claims

1. A hydraulic control for a continuously variable transmission having hydraulically adjustable axially movable pulley members and a gearing arrangement for the transmitting of torque between an input shaft and an output shaft, said control comprising; a source of fluid pressure; first valve means connected with said source and being operable to supply control fluid to one of said adjustable pulley members, said control fluid operating on said first valve means to impose a force thereon; feedback means for imposing a force proportional to the axial position of said one adjustable pulley member on said first valve means in addition to said control fluid imposed force; torque sensing means operatively connected with said gearing arrangement for transmitting a force proportional to the torque transmitted by said gearing arrangement; servo motor means operatively connected with said torque sensing means; second valve means connected with said torque sensing means and being operable on a change of torque transmission to distribute a pressure signal from said source to said servo motor means and said servo motor means being responsive to said pressure fluid to balance the force on said torque to balance the force on said torque sensing means and discontinue



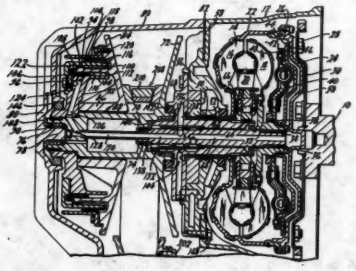
fluid distribution thereto; and means for directing the pressure signal from said second valve means to said first valve means.

4,608,032

INFINITELY VARIABLE BELT DRIVE WITH LOW FRICTION SEALS FOR THE PRIMARY AND SECONDARY SHEAVES

Thomas R. Stockton, Ann Arbor, and Frederick J. Morris, Milford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 2, 1984, Ser. No. 667.657
Int. Cl.[4] F16H *11/04*
U.S. Cl. 474—28 2 Claims



1. An infinitely variable belt drive comprising:

a torque input sheave assembly, a torque output sheave assembly and a belt driveably connecting said sheave assemblies;

said driving sheave assembly comprising an axially fixed driving sheave portion and an axially adjustable driving sheave portion with said belt positioned between said driving sheave portions and frictionally engageable therewith, the pitch radius of said belt and driving sheave assembly increasing as said adjustable driving sheave portion is moved axially relative to said fixed driving sheave portion;

a fluid pressure actuator for said driving sheave assembly comprising an actuator member located adjacent said axially adjustable driving sheave portion and connected to said fixed driving sheave portion, said actuator member

having an axial extension, a fist axial extension carried by said adjustable driving sheave portion located adjacent the axial extension of said actuator member and a second axial extension carried by said fixed driving sheave portion;

a first flexible diaphragm seal connected at its outer margin to said adjustable driving sheave portion and at its inner margin to said second axial extension;

a second flexible diaphragm seal secured at its inner margin to said fixed actuator member and at its outer margin to said first axial extension;

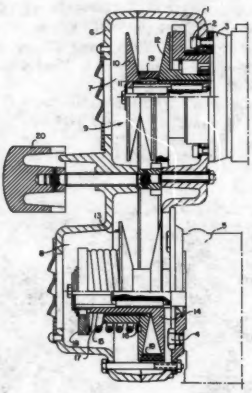
said actuator member and said diaphragm seals defining a pressure chamber which, when pressurized, causes said adjustable driving sheave portion to move axially relative to said fixed driving sheave portion, the adjustable driving sheave portion and the fixed driving sheave portion being formed with engaging sliding spline teeth, said sliding spline teeth being located within the pressure chamber for said driving sheave assembly.

4,608,033

BELT SPEED VARIATOR

Georges Stevens, Billere, France, assignor to Girard Transmissions, France

Filed Oct. 4, 1984, Ser. No. 657,692
Claims priority, application France, Oct. 6, 1983, 83 15894
Int. Cl.⁴ F16H *55/52, 55/56*
U.S. Cl. 474—39 **3 Claims**



1. A belt speed variator which comprises:

(a) a drive pulley,

(b) a driven pulley,

(c) a transmission belt passing over said drive pulley and driven pulley,

(d) said drive pulley and driven pulley each having an axially fixed flange and a mobile flange moving axially with respect to this fixed flange, the spacing between the flanges of these two pulleys varying in a conjugate way in operation,

(e) a fixed bearing ring supported by a casing of the variator,

(f) a bearing which bears on said fixed ring, said bearing supporting radially and axially the outer face of the mobile flange of said drive pulley, and

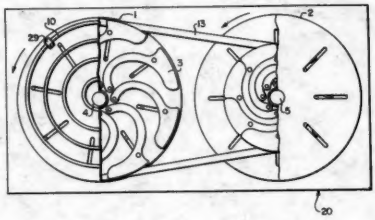
(g) a clearance provided between said mobile flange and said axially fixed flange of the drive pulley along the whole length thereof so that no contact point is provided between said mobile flange and said axially fixed flange.

4,608,034

VARIABLE SPEED RATIO DRIVE

James B. Reswick, 1003 Dean Run Dr., McLean, Va. 22101

Filed Mar. 27, 1984, Ser. No. 593,928
Int. Cl.⁴ F16H *9/02*
U.S. Cl. 474—49 **40 Claims**



1. A pulley having an automatically varying diameter suitable for being mounted for rotation on a shaft having an axis of rotation, comprising:

segment means for transmitting torque from the shaft to an endless flexible transmission belt passed over said pulley, said segment means including a plurality of arms of unitary construction, each of said arms having first and second ends, a radially extending arcuate portion interconnecting said ends, and a drive surface portion at said second end suitable for accommodating the belt;

hub means connected to the shaft;

means for pivotally connecting each of said arms near said first end to said hub means at equal angularly spaced positions along the periphery of said hub means;

said pulley having a contracted position wherein said arms contact one another along their adjacent peripheries and further wherein each said drive surface portion of each of said arms is abutting an adjacent said drive surface portion of the adjacent one of said arms in an end-to-end manner to form an annular drive surface having a minimum pulley diameter;

said pulley further including a plurality of expanded positions wherein said arms pivot outwardly from said contracted position to form a segmented annular drive surface having a pulley diameter greater than said minimum diameter;

means for guiding the pivoting of said arms inwardly and outwardly between said contracted position and said expanded positions; and

means for applying a bias torque equally between each of said of said arms and said hub means whereby said pulley is expanded to one of said expanded positions by the force of said bias torque such that said arms are caused to pivot inwardly toward said contracted position from said one of said expanded positions against said bias torque when the torque of a load applied to the pulley through the belt exceeds said bias torque.

4,608,035

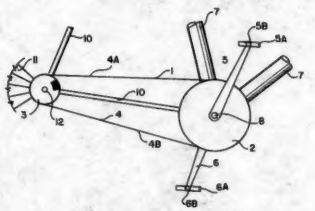
DRIVE ARRANGEMENT

Gordon K. Reader, 49 Hayes Chase, West Wickham, Kent, BR4 0HX, United Kingdom

Filed Dec. 2, 1983, Ser. No. 557,462
Int. Cl.⁴ F16H *7/00*
U.S. Cl. 474—148 **2 Claims**

1. An arrangement for augmenting the operating force developed in a bicycle chain drive system incorporating a pedal crank drive wheel rotatable about a first axis with respect to the frame of the cycle and having pedal supporting drive cranks mounted to the crank wheel as to be oppositely directed to each other and rotatable with the cranks, a driven chain wheel rotatable about a second axis parallel to the first axis and

having a two to one gearing ratio relative to the drive wheel, an unbalanced weight mounted for rotation with the driven chain wheel and having an axis which is parallel with the second axis whereby the unbalanced weight has a rotational rate twice that of the drive wheel for imparting a succession of



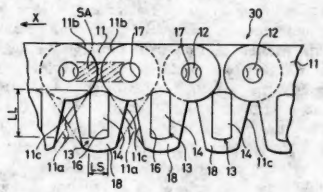
force impulses to the chain drive which act in such manner as to so augment the operating forces developed in the chain as a result of said forces being applied to the cranks, in such manner that the augmenting force transmitted to the crank wheel is the same for each pedal.

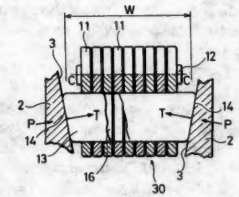
4,608,036

CHAIN V-BELT

Junichi Dono, Ishikawa, Japan, assignor to Daido Kogyo Co., Ltd., Kaga, Japan

Filed Jun. 21, 1984, Ser. No. 623,218
Claims priority, application Japan, Jun. 24, 1983, 58-98334[U]
Int. Cl.⁴ F16G *5/18, 1/24*
U.S. Cl. 474—201 **6 Claims**





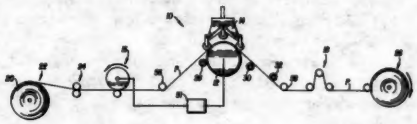
1. In a chain V-belt working on a pair of two-split pulley blocks and having a plurality of links coupled endlessly therefor and having a block installed on each of said links, for transmitting power by the frictional force arising between said link blocks and said pulley blocks in such a manner that both ends of each of said link blocks are brought in contact with said pulley blocks, the improvement characterized in that a projection is formed on the inside of each of said links when said belt is coupled endlessly, the link blocks are installed on said projections and each of said link blocks has a substantially rectangular section which is longer in the direction perpendicular to that in which the belt runs than in the direction in which the belt runs.

4,608,037

METHOD OF AND APPARATUS FOR ABRADING MECHANICALLY PERFORATED CIGARETTE FILTER TIPPING PAPER

William F. Fleming, III, Winston-Salem, N.C., assignor to RJR Archer, Inc., Winston-Salem, N.C.

Filed Apr. 23, 1984, Ser. No. 603,262
Int. Cl.⁴ B31F *7/00;* B24B *5/38, 9/02*
U.S. Cl. 493—22 **10 Claims**



1. Apparatus for removing perforation flaps from a perforated web, comprising:

drum means surfaced with abrasive material for abrading the flaps from the web;

means connected to said drum means for rotating said drum means in one direction at a predetermined peripheral speed of the drum means;

means arranged adjacent the drum means for passing said web into contact with an arcuate portion of the drum means periphery in said one direction at a speed less than the peripheral speed of the drum means, the flaps of said web being interposed between the web and the drum means;

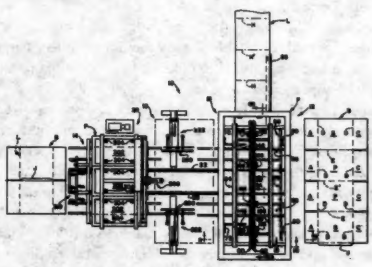
means arranged in confronting relation with the arcuate portion of said drum means for applying pressure against the outwardly facing surface of the web, said pressure applying means comprising a yoke, three idler pulleys mounted on said yoke in a triangular array and an endless band arranged about said pulleys, means connected to one of said pulleys for resiliently biasing said one pulley in a direction to apply tension to the band.

4,608,038

APPARATUS AND METHOD FOR LINING, FOLDING AND GLUING CONTAINER BLANKS

Arthur W. Virta, Mt. Prospect, and Fred E. Ullman, Glencoe, both of Ill., assignors to A. W. Virta & Associates, Inc., Wheeling, Ill.

Filed Oct. 30, 1984, Ser. No. 666,500
Int. Cl.⁴ B31B *7/02, 7/26, 1/62*
U.S. Cl. 493—29 **21 Claims**



1. An apparatus for folding and gluing container body blanks, comprising

frame means having a blank loading end and a blank discharge end;

blank conveyor means mounted on said frame means for advancing a body blank along a work path relative to said frame means from said blank loading end to said blank discharge end;

liner conveyor means mounted on said frame means for

advancing a liner transversely of said blank conveyor means into a postion above said work path;

support means for supporting said liner above said work path and for confining laterally opposite edge portions of said liner during advancement of said liner by said liner conveyor means;

means positioned in operative association with said liner conveyor means for lowering said liner into superposed relation onto a body blank being advanced along said path by said blank conveyor means to form a laminated body blank, and means for adhering said liner to said body blank comprising means for applying adhesive to one of said liner and said body blank prior to lowering of said liner into said superposed relation to form said laminated body blank;

means positioned in operative association with said support means for releasing said opposite edge portions of said liner from said support means prior to lowering of said liner by said liner lowering means;

means positioned along said work path downstream of said liner lowering means for folding said laminated body blank and for adhering said laminated body blank in a folded condition, said folding and adhering means being upstream of said blank discharge end of said frame means, whereby said blank conveyor means advances said folded and laminated body blank to said blank discharge end of said frame means.

16. A method of folding and gluing a container body blank, comprising the steps:

providing frame means having blank conveyor means mounted thereon for intermittently advancing a body blank along a straight-line horizontal work path from a blank loading end to a blank discharge end of said frame means;

providing liner conveyor means on said frame means for advancing a liner transversely of and to a stopped position above said work path;

providing support means for supporting and confining opposite edge portions of said liner during advancement thereof by said liner conveyor means;

advancing a liner with said liner conveyor means to said stopped position, while supporting and confining opposite edge portions of said liner with said support means;

advancing a body blank from said blank loading end to a position beneath said liner conveyor means and stopping advancement of said body blank;

applying adhesive to the upper surface of said body blank during said body blank advancing step for forming a laminated body blank including said body blank and said liner superposed thereon;

lowering said liner from said stopped position into superposition onto said body blank to further form said laminated body blank, including releasing the edge portions from said support means prior to lowering of said liner;

applying adhesive to a flap portion of said laminated body blank;

advancing said laminated body blank to a folding station;

folding said laminated body blank at said folding station about a pair of parallel score lines of said body blank to bring said flap portion into juxtaposition with a side panel portion of said body blank to form an adhesive joint with the adhesive applied to said flap portion to thereby form a folded and laminated body blank;

applying pressure to said folded and laminated body blank upstream of said blank discharge end; and

advancing said folded and laminated body blank from said discharge end of said frame means.

4,608,039

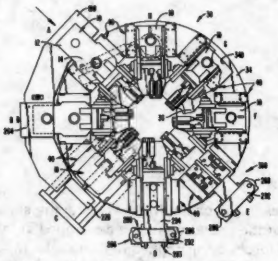
ENVELOPE FOLDING SYSTEM

Edward T. Ferri, Jr., Morgan Hill, and Paul E. Seaborn, Los Gatos, both of Calif., assignors to Seaborn Development, Inc., Campbell, Calif.

Filed Apr. 13, 1984, Ser. No. 599,855

Int. Cl.[4] B31B *1/28*

U.S. Cl. 493—164 10 Claims



1. An apparatus for folding and sealing envelope blanks having two faces and pair of flaps for closing the faces; said apparatus comprising:

a support frame;

a circular table rotatably mounted on the support frame;

means for incrementally rotating the table through a preselected angle;

a plurality of platform assemblies mounted along the periphery of the circular table at intervals equal to the preselected angle, each of said platform assemblies including means for receiving and clamping envelope blanks in place and means for folding the flaps of the envelope blank inward, wherein said means for folding the flaps inward includes a pair of flap clamps, a pair of levers pivotally mounted at one end on the platform assembly with each lever having a cam surface formed therein, and a rotatable coupling member having a pair of rollers which engage the cam surfaces on the levers, whereby rotation of the coupling member in one direction causes the flap clamps to move upward and inward to fold the side flaps and rotation in the other direction causes the flap clamps to disengage the side flaps; and

a multiplicity of stationary assemblies mounted on the support frame adjacent the periphery of the circular table at intervals equal to the preselected angle, said stationary assemblies including:

(a) a transverse folding assembly for folding the faces of the envelope blanks together;

(b) a flap folding assembly for actuating the flap folding means on the platform assemblies to simultaneously fold the envelope flaps to close the faces together, said flap folding assembly including a first actuator for closing the flap clamps on the side flaps of the envelope, said first actuator comprising a double-acting cylinder having a spool which engages the coupling member on the flap folding means when the cylinder is extended and means for rotating the spool in the one direction when it is engaged to the coupling member;

(c) a sealing assembly for sealing the flaps to the evelopes; and

(d) a discharge station including a second actuator for opening the flap clamps from the side flaps of the envelope, said second actuator having a spool which engages the coupling member on the flap folding means when the cylinder is extended and means for rotating the spool in the other direction when it is engaged to the coupling member.

4,608,040

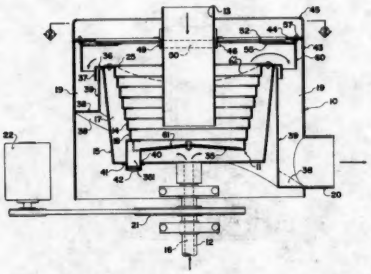
CENTRIFUGAL SEPARATOR

Benjamin V. Knelson, 2707 Mountview Place, Burnaby, British Columbia, Canada (V3J 1E5)

Continuation-in-part of Ser. No. 510,509, Aug. 18, 1983, abandoned, which is a continuation-in-part of Ser. No. 479,677, Mar. 28, 1983, abandoned. This application Apr. 2, 1984, Ser. No. 595,814

Int. Cl.[4] B04B *11/00*

U.S. Cl. 494—27 19 Claims



1. Apparatus for centrifugally separating intermixed materials of different specific gravities comprising a centrifuge bowl having a base and a peripheral wall surrounding an axis passing through the base and generally upstanding from the base to an open mouth, a plurality of axially spaced, inwardly projecting, peripherally extending projections mounted on an inner surface of the peripheral wall and a plurality of openings extending through the peripheral wall from an outer surface to the inner surface thereof, the openings being arranged between each projection and the next adjacent projection and in angularly spaced relation around the peripheral wall, means mounting the bowl for rotation about the axis, means for feeding the materials into the bowl such that during rotation of the bowl they flow over the peripheral wall for discharge from the open mouth, and means for applying fluid to the outer surface of the bowl so as to pass through the openings and fluidize the materials between the projections, the openings passing through the peripheral wall in a direction inclined to an axial plane passing therethrough so as to tend to direct the fluid around the peripheral wall.

4,608,041

DEVICE FOR TREATMENT OF WOUNDS IN BODY TISSUE OF PATIENTS BY EXPOSURE TO JETS OF GAS

Frese Nielsen, Rosenlundsvägen 42, S-440 80 Ellös, Sweden

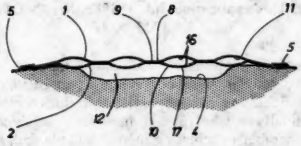
PCT No. PCT/SE82/00325, § 371 Date Jun. 13, 1983, § 102(e) Date Jun. 13, 1983, PCT Pub. No. WO83/01388, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 11, 1982, Ser. No. 504,689

Claims priority, application Sweden, Oct. 14, 1981, 8106069

Int. Cl.[4] A61F *2/36*

U.S. Cl. 604—23 5 Claims



1. A device for treating a wound in body tissue of a patient, comprising: a nozzle unit to be placed over the wound so as to cover the wound and to separate the wound from surrounding space, an inlet for gas under pressure to the unit, said unit including a first and second layer of plastic foil, both having first surfaces where the layers are sealingly joined to each other including surfaces extending along a major part of the circumference of the unit, said first and second layers defining an inner space, said inlet communicating with said inner space so as to be sustained at least partly by gas pressure separating the first and second layers from each other at second surfaces, said first layer having a plurality of inlet openings leading from said inner space to the wound, said inlet openings being positioned in said second surfaces of said first layer, there being two rows of inlet openings with each row being displaced relative to a centerline between the two rows so that when the nozzle unit adjacent to each inlet opening assumes a curved configuration each inlet opening will be slanted with respect to the wound and a jet of gas exiting from each inlet opening will be directed obliquely at the wound, said first and second layers having a plurality of outlet openings positioned in at least part of said first surfaces, said outlet openings leading from the area of the wound directly to the surrounding space, so that the inlet openings may direct a plurality of gas jets from the inner space to the wound, and the outlet openings may let out gas directly to the surrounding space from the wound.

4,608,042

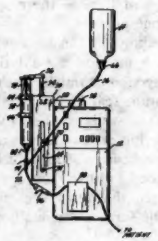
APPARATUS FOR SEQUENTIAL INFUSION OF MEDICAL SOLUTIONS

Timothy W. Vanderveen, Poway, and Gus Tseo, San Diego, both of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 25, 1985, Ser. No. 779,897

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—81 9 Claims



1. An apparatus for the sequential infusion of I.V. fluids to a patient comprising:

a fluid source;

a fluid flow device;

an I.V. tubing set connecting said fluid source in fluid communication with said fluid flow device, said tubing set comprising in sequence, downstream from said fluid source, a one-way check valve and a fluid access port;

means on said fluid flow device to control the rate of fluid flow therethrough;

a pre-filled syringe, having a fluid chamber and a Plunger slidably positioned therein, connectable in fluid communication with said access port; and

an activation means comprising: a case; a shuttle slidably mounted on said case for movement between a first position and a second position; a drive shaft having a depressor affixed thereto; a normally relaxed spring connecting said drive shaft to said shuttle; clips attached to said case for mounting said syringe on said case to position said depressor against said plunger and establish said shuttle in the first position; and a handle fixedly mounted on said shuttle for moving said shuttle from the first position into the second position to extend said spring for urging said depressor against said plunger to dispense fluid from said chamber of said syringe and sufficiently raise the hydrostatic pressure downstream from said one-way check

valve to prevent fluid flow therethrough when said syringe is engaged with said access port for the infusion of fluid from said syringe by said fluid flow device to the patient.

4,608,043

I.V. FLUID STORAGE AND MIXING SYSTEM

Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jun. 22, 1984, Ser. No. 623,066
Int. Cl.[4] A61M 5/00
U.S. Cl. 604—87 5 Claims

1. A device for separately storing and subsequently mixing a liquid and a medicament comprising:

a container formed of flexible thermoplastic material and having at least one port;

a partition seal dividing said flexible container, said partition seal spanning the interior of said flexible container to define first and second chambers within said flexible container, the partition seal being formed by a sealing together of opposing walls of the flexible container, said partition seal having at least one weakened section, the weakened section being a section of the partition seal of sufficiently reduced width in comparison to the remainder of the partition seal that the seal in the weakened section will fail under the force of manually generated pressures in the fluid;

said first chamber containing the liquid in fluid communication with said port;

said second chamber containing the medicament; whereby compressing the walls of said first chamber of the flexible container causes said liquid to rupture the weakened portion of said partition seal and mix the liquid and the medicament.

4,608,044

COMPRESS FOR TREATMENT OF WOUNDS

Percy Nordqvist, Särö , and Erik Hylerstedt, Gothenburg, both of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

Continuation of Ser. No. 177,757, Dec. 3, 1979, abandoned. This application Feb. 26, 1982, Ser. No. 352,515
Claims priority, application Sweden, Apr. 3, 1978, 7803697
Int. Cl.[4] A61M 35/00
U.S. Cl. 604—290 2 Claims

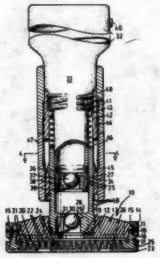
1. In a method for treating infected discharging wounds of the type wherein a sterile, therapeutically inert compress impregnated with an isotonic or hypertonic aqueous solution consisting essentially of sodium chloride is applied to the wound, the improvement comprising drying the impregnated compress prior to application thereof to the wound to evaporate substantially all the water present and pressing the dried impregnated compress against the wound and securing the compress with a bandage.

4,608,045

APPLICATOR FOR IMPRESSING BRANDS OR MEDICAMENTS ON ANIMALS

Donald W. Fretwell, 21 Looranah Street, Jindalee, Queensland, 4074, Australia

Filed Nov. 7, 1983, Ser. No. 549,491
Claims priority, application Australia, Nov. 10, 1982, PF6737; Dec. 21, 1982, PF7362
Int. Cl.[4] A61D 7/00
U.S. Cl. 604—311 4 Claims



1. An applicator for impressing liquid brands or medicaments on animals including:

an applicator pad having a liquid permeable base free of any needles for surface application to an animal,

a chamber in the applicator pad communicating with the liquid-permeable base,

a cylinder leading by way of a first non-return valve to the chamber,

a replaceable liquid cartridge comprising a body serving as a handle for the applicator, and a neck slidable in the cylinder as a plunger, a second non-return valve normally closing a liquid outlet from the neck and adapted, when the plunger is retracted in the cylinder, to unseat allowing passage of fluid from the cartridge to the cylinder and, when the plunger is advanced in the cylinder, to close and force liquid from the cylinder, unseating the first non-return valve, and into the chamber in the applicator pad,

the liquid cartridge being screw threadedly engaged in a sleeve slidable but non-rotatable on the cylinder,

adjustable stop means being provided for said sleeve,

said adjustable stop means including a stop nut threadedly engaged on the sleeve which when the plunger is in its advanced position abuts the applicator pad,

the liquid-permeable base being liquid-permeable by virture of a plurality of holes therethrough, and

a multiplicity of removable plugs blocking the holes whereby when appropriate plugs are removed, a flow of liquid can occur in a desired outline.

4,608,046

FLAT FOLDED FEMALE URINARY AID

Keivan Towfigh, 51 Harvard Ave., Medford, Mass. 02155

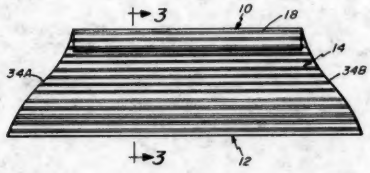
Continuation of Ser. No. 143,831, Apr. 25, 1980, abandoned, which is a continuation of Ser. No. 825,939, Aug. 19, 1977, abandoned. This application Jul. 3, 1985, Ser. No. 752,351
Int. Cl.[4] A61F 5/44
U.S. Cl. 604—329 5 Claims

1. A urinary aid for feminine use comprising:

a flat-folded tubular member having a pair of flexible side panels defined by a pair of parallel fold lines which extend longitudinally of the tubular member, each end of the tubular member terminating in an openable end, said panels being expandable from a flat-folded configuration to an opening-defining configuration in response to compression of the fold lines toward each other, as least one of the openable ends of the tubular member being dimensioned so as to be insertable, in its flat-folded configuration, be-

tween the user's labia and being constructed and arranged so as to part the labia in response to said compression;

the ends of the side panels, at least at one end of said member, being of a configuration such that when said end is



expanded to its opening-defining configuration, said end will define an opening which extends generally along a plane which is disposed at an angle to the longitudinal dimension of the member;

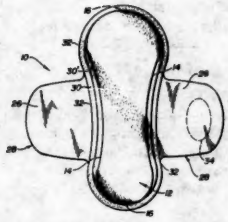
said ends of said panels being S-shaped.

4,608,047

SANITARY NAPKIN ATTACHMENT MEANS

William B. Mattingly, Somerset, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed May 28, 1985, Ser. No. 737,755
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—387 **18 Claims**



1. In a sanitary napkin of the type for placement in the inner crotch portion of an undergarment, which napkin comprises an absorbent element having a body facing side, a garment facing side, longitudinally extending edges and transverse ends and further comprises flaps extending from each of said longitudinal edges;

the improvement wherein said flaps extend to a length sufficient to allow the flaps to overlie the outer crotch portion of the undergarment, said flaps being sufficiently drapable so as to allow each to fold about said crotch portion at any of the infinite number of lines lying essentially parallel to the junction line between the absorbent element and each flap and the extreme end of said flap, said sufficient drapability being that of a polyethylene film having a thickness of less than about 5 mils;

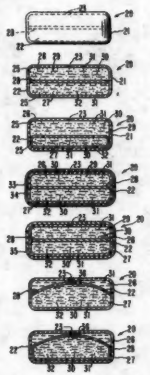
whereby said sanitary napkin may be applied to crotch portions of varying widths without causing said crotch portions to wrinkle and conform to the dimensions of the sanitary napkin.

4,608,048

DISPENSING DEVICE WITH DRUG DELIVERY PATTERNS

Richard Cortese, Los Gatos, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Dec. 6, 1984, Ser. No. 678,744
Int. Cl.[4] A61M *7/00*
U.S. Cl. 604—890 **29 Claims**



1. An osmotic device for the controlled delivery of a beneficial agent to an environment of use, comprising:

(a) a wall comprising in at least a part a semipermeable composition permeable to the passage of an exterior fluid present in the environment of use and substantially impermeable to the passage of a beneficial agent, the wall surrounding:

(b) a first compartment containing a beneficial drug;

(c) a second compartment containing a beneficial drug;

(d) at least one passageway in the wall initially communicating with the first compartment and the exterior of the device; and,

(e) means in the device for separating the first and second compartments for initially restricting the passage of beneficial drug from the second compartmentt, said means comprising the ability for forming at least one aperture in situ for releasing the drug from the second compartment and then through the passageway that initially communicated with said first compartment for delivering the drug from the device.

4,608,049

INTRAOCULAR LENS AND METHOD OF INSERTING AN INTRAOCULAR LENS INTO AN EYE

Charles D. Kelman, 269-70 Grand Central Pkwy., Floral Park, N.Y. 11005

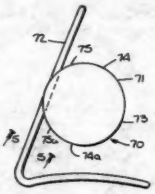
Filed Jun. 28, 1982, Ser. No. 393,057
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **4 Claims**

1. An intraocular lens comprising:

position-fixation means having an elongated intermediate portion having seating portions at opposite axial ends thereof for seating the lens within an eye,

a deformable lens body of flexible material connected at a peripheral portion thereof to said position-fixation means, with the axis of said position-fixation means generally tangential to said peripheral portion, said lens body having light-focusing capability and adapted to be curled about said axis of said position-fixation means into a substantially cylindrical shape having a diameter substantially smaller than the maximum dimension of said lens body when uncurled, so that said lens can be inserted into the eye in

the direction of said axis, when said lens body is in curled condition, through a substantially smaller opening in the eye than the opening through which said lens body could be inserted when uncurled, said lens body being formed of



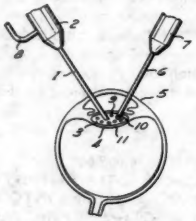
a material more flexible than the material of said intermediate portions of said position-fixation means and being capable of returning to substantially its uncurled configuration after insertion into the eye.

4,608,050

CORRECTION OF DEFECTS IN THE EYE AND COMPOSITIONS THEREFOR

George M. Wright, Mission Viejo, and Thomas D. Talcott, Irvine, both of Calif., assignors to Innovative Surgical Products, Inc., Santa Ana, Calif.

Filed Jul. 21, 1983, Ser. No. 515,790
Int. Cl.⁴ A61F *1/16, 1/24*
U.S. Cl. 623—6 **59 Claims**



1. A method of replacing the lens in the eye of a human being or other animal in vivo which comprises:

introducing into the lens capsule, from which the natural lens has been removed, a curable liquid silicone polymer composition comprising crosslinkable silicone polymer and a crosslinker through a needle inserted into a hole in the lens capsule;

sealing the hole in the lens capsule by curing the polymer composition that is in the vicinity of the hole to an extent sufficient to prevent loss of said composition from the lens capsule prior to withdrawing the needle from the hole; and;

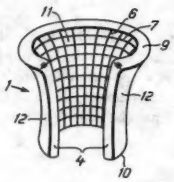
curing said composition to form in situ a clear, synthetic lens.

4,608,051

AUDITORY CANAL WALL PROSTHESIS AND PROCESS FOR PRODUCING SAME

Ralf Reck, Mainz-Bretzenheim; Heinz Broemer, Wetzlar-Hermannstein; Klaus Deutscher, Wetzlar, and Henning Franek, Braunfels-Tiefenbach, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

PCT No. PCT/DE82/00092, § 371 Date Dec. 29, 1982, § 102(e) Date Dec. 29, 1982, PCT Pub. No. WO82/03765, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 29, 1982, Ser. No. 459,696
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117025; Mar. 26, 1982, 3211212
Int. Cl.⁴ A61F *2/18*
U.S. Cl. 623—10 **35 Claims**



1. A prosthesis for the total or partial replacement of a rear auditory canal wall, comprising:

an open ended, hollow cylindrical sleeve having a longitudinal axis extending between a first and a second end, said sleeve including a wall defining an inner surface and an outer surface, wherein said inner surface is defined by a plurality of differential hyperboloid expansions having ellipsoidal cross sections perpendicular to said longitudinal axis, wherein at least one first expansion defines said first end and at least one second expansion defines said second end;

said sleeve further including a cut-out section defined by first and second axial edges extending from said first end to said second end; and

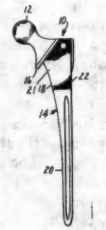
said sleeve including a bioactive material.

4,608,052

IMPLANT WITH ATTACHMENT SURFACE

Craig L. Van Kampen, Oakdale, and Eric N. Hockert, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 25, 1984, Ser. No. 603,777
Int. Cl.⁴ A61F *2/32*
U.S. Cl. 623—22 **22 Claims**



1. An implant for use in a human body, said implant having an integral attachment surface adapted to permit ingrowth of living tissue, said attachment surface being defined (1) by a multiplicity of adjacent, generally part-spherical, concave surface parts within said implant having intersecting, generally

aligned rims defining an inner attachment surface portion within said implant and (2) by a multiplicity of spaced posts projecting from said inner attachment surface portion, said posts each having a plurality of side attachment surfaces, which side attachment surfaces (1) are generally cylindrically concave, (2) intersect to define post edges, and (3) are radiused at their intersections with said concave surface parts.

4,608,053

FEMORAL HIP PROSTHESIS

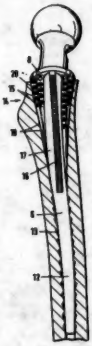
Arnold Keller, Kayhude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 490,008

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216539

Int. Cl.⁴ A61F *2/32*

U.S. Cl. 623—23 **22 Claims**



1. A femoral hip joint prosthesis comprising:

a slender stem core (17) having a proximal end section for engaging a trochanteric region (14) of a femur (1) and having a distal section (12) for extending into a medullary cavity; and

a plurality of longitudinal ribs (15) projecting from said stem core and extending along said proximal end section on each of dorsal and ventral sides of said stem core, each of said ribs having a ridge surface (18) opposite said stem core to engage surrounding bony tissues, each of said ribs having a broad surface extending between said stem core and said ridge surface and facing a medial side of said femur;

each of said ribs defining a multiplicity of perforations (20) extending through said broad surface.

4,608,054

ADJUSTABLE CONNECTION FOR CONNECTING ADJOINING PARTS OF AN ARTIFICIAL LIMB

Mats Schröder, Stockholm, Sweden, assignor to Landstingens Inkopscentral LIC, Sweden

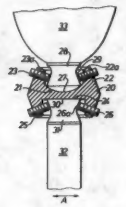
Filed Jun. 14, 1984, Ser. No. 620,431

Claims priority, application Sweden, Jun. 15, 1983, 8303415

Int. Cl.⁴ A61F *2/64*

U.S. Cl. 623—39 **22 Claims**

6. An adjustable connection for connecting adjoining parts of an artificial limb, and comprising a first, second and a third coupling element, said first coupling element being disposed between said third and second coupling elements and having a first support surface which is across the axis of said artificial limb and a first annular flange encircling the area of said first support surface, said first coupling element having a second support surface directed oppositely to said first support surface and a second annular flange encircling the area of said second support surface, said third coupling element extending with clearance within said first annular flange and having a support surface abutting said first support surface, first setting elements extending inwardly from said first annular flange to engage said first coupling element, said second coupling element ex-



tending with clearance within said second annular flange and having a support surface abutting said second support surface, and second setting elements extending inwardly from said second annular flange to engage said second coupling element and locate the same in position in the first coupling element, each of said flanges having an annular edge and each said edge being unloaded.

4,608,055

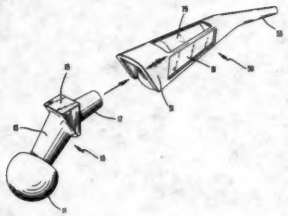
FEMORAL COMPONENT FOR HIP PROSTHESIS

Bernard F. Morrey, and Edmund Y. S. Chao, both of Rochester, Minn., assignors to Mayo Foundation, Rochester, Minn.

Filed Jan. 12, 1984, Ser. No. 570,094

Int. Cl.⁴ A61F *1/04*

U.S. Cl. 623—23 **1 Claim**



1. In an improved femoral component including a stem component and a head and neck component connectable to said stem component to form said femoral component, said head and neck component comprising:

(a) a head portion;

(b) a neck member at a first end thereof protruding from a substantially flat face of said head portion;

(c) said neck member, at a second end thereof being connected to a first surface of a basalar neck portion;

(d) said basalar neck portion having a second surface from which protrudes a tapered portion, a third substantially rectangular surface substantially perpendicular to said second surface, and fourth and fifth surfaces substantially perpendicular to both said second surface and said third surface; and

(e) said neck member and said tapered portion forming an obtuse angle with one another and said first and second surfaces converging to form an acute angle therebetween.

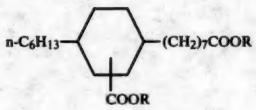
4,608,056

DYE COMPOSITION AND METHOD OF USE THEREOF FOR COLORING THERMOPLASTIC MATERIALS

Robert B. Wilson, P.O. Box 6786, Greenville, S.C. 29606

Continuation-in-part of Ser. No. 584,144, Feb. 27, 1984, abandoned. This application Feb. 15, 1985, Ser. No. 702,316
Int. Cl.[4] D06P 5/00
U.S. Cl. 8—506 42 Claims

1. A waterless dip dye composition for apparel or other thermoplastic articles, comprising an aromatic polyester of the formula $C_6H_z(COOR_1)_z$, wherein R_1 is substituted or unsubstituted alkyl of 6–22 carbon atoms or the residue of an alkylphenol ether of an alkoxyalkanol; z is 3, 4, 5, or 6 and z' is 6-z; and a cycloaliphatic diester of the formula



wherein R is substituted or unsubstituted straight or branched chain alkyl of 4–20 carbon atoms, polyoxyalkylene of the formula $R'(OC_xH_{2x})_n$ or phosphated polyoxyalkylene of the formula

$$(HO)_2P(=O)(OC_xH_{2x})_nOC_xH_{2x}—$$

or a salt thereof, wherein $(C_xH_{2x}O)_n$ is $(C_2H_4O)_n—$, $(C_3H_6O)_n—$ or $(C_2H_4O)_p—(C_3H_6O)_q—$; R' is H or ArCO; Ar is substituted or unsubstituted mono- or bicyclic aryl of up to 15 carbon atoms; x is 2 or 3; n is 2–22 and the sum of p+q is n; and an organic colorant.

4,608,057

CLEAR STABLE MOTOR FUEL COMPOSITION

Marshall E. Davis, Poughkeepsie, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 3, 1985, Ser. No. 740,159
Int. Cl.[4] C10L 1/32
U.S. Cl. 44—51 22 Claims

1. A process for making a clear, stable gasoline blend from a hazy, water-saturated gasoline containing a mixture of hydrocarbons in the gasoline boiling range, from about 2.0 to about 12.0 volume percent of methanol, from about 2.0 to about 10.0 volume percent of a cosolvent (C_2–C_5) aliphatic alcohol and 0.1 to 0.5 volume percent of contaminating water, said process comprising adding to said water-saturated gasoline, from about 0.05 to about 3.0 weight percent of a nonionic surfactant of an alkanoic acid derivative

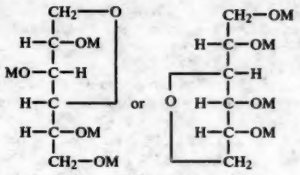
wherein R is a (C_9–C_{24}) alkyl or alkylene group, and R' is polyethylene glycol

$$—(CH_2CH_2O)_xH$$

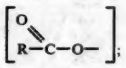
where x is a numeral of about 1 to about 10, or R' is

$$H(OCH_2CH_2)_yR''—$$

wherein y is a numeral of about 4 to about 20 and R'' is



wherein one M is



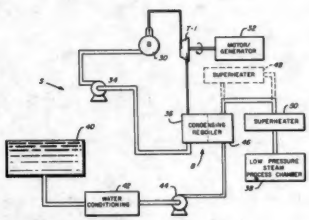
a second M is $H(OCH_2CH_2)_y$ and the remaining M's are H.

4,608,058

STEAM SUPPLY SYSTEM FOR SUPERPOSED TURINE AND PROCESS CHAMBER, SUCH AS COAL GASIFICATION

William M. Menger, Houston, Tex., assignor to Houston Industries, Incorporated, Houston, Tex.

Filed Sep. 12, 1984, Ser. No. 649,596
Int. Cl.[4] F01K 25/00; C10J 3/54
U.S. Cl. 48—73 10 Claims



1. A steam supply system for a process chamber consuming superheated steam at a pressure of about 600 psi or below which is driven by a boiler operating at a pressure of about 2000 psi, a pressure range above that needed by said process chamber for also driving a superposed turbine, comprising:

(a) a high pressure boiler feed pump for supplying highly purified water to said boiler;

(b) a condensing reboiler connected to receive steam from said superposed turbine in a high pressure side;

(c) said condensing reboiler also having a low pressure side, essentially isolated from fluid contact with said high pressure side, for receiving water for use in the lower operating pressure steam processes;

(d) said condensing reboiler further comprising integral superheating means for heating the wster received in said low pressure side into superheated low pressure steam with the steam received in the high pressure side;

(e) means for conveying fluid from said high pressure side of said condensing reboiler to said boiler feed pump; and

(f) means for conveying the low pressure superheated steam from said condensing reboiler to said process chamber.

8. A process of supplying superheated steam for a process chamber consuming steam at a pressure of about 600 psi or below which is driven by a boiler operating at a pressure range above that needed by the process chamber for also driving a superposed turbine with steam at a pressure of 2000 psi or above, comprising the steps of:

(a) supplying highly purified water to the boiler;

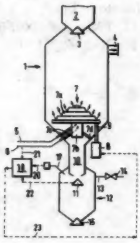
(b) receiving steam from the superposed turbine in a high pressure side of a condensing reboiler;
(c) receiving water in a low pressure side of the condensing reboiler having an integral superheater in fluid isolation from the high pressure side;
(d) heating the water in the low pressure side, with the steam received from the superposed turbine, into low pressure superheated steam;
(e) conveying fluid from the high pressure side of the condensing reboiler for supply to the boiler; and
(f) conveying low pressure superheated steam to the process chamber for use therein.

4,608,059

METHOD OF OPERATING A REACTOR FOR GASIFYING SOLID FUELS

Hans Küpfer, and Carl Hafke, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 20, 1984, Ser. No. 652,760
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333870
Int. Cl.[4] C10J *3/06, 3/14, 3/16*
U.S. Cl. 48—197 R **1 Claim**



1. A method of operating a reactor for gasifying a solid fuel at a pressure in the range of 10 to 150 bar, said reactor comprising a rotating grate, a lock chamber container below said grate and means for feeding oxygen and at least one gasifying agent selected from the group which consists of steam and carbon dioxide through said grate into the reactor, which method comprises the steps of:
(a) treating a bed of solid fuel above said grate with at least one gasifying agent to gasify said solid fuel and leave incombustible mineral matter in said bed;
(b) rotating said grate at a controlled speed to discharge said incombustible mineral matter as ash into said lock chamber container;
(c) periodically closing, pressure-relieving and emptying said lock chamber container and producing a corresponding first signal;
(d) measuring the temperature in the lock chamber container above the highest ash level in said lock chamber container and producing a corresponding second signal representing said temperature above the highest ash level in said lock chamber;
(e) in response to a deviation of said temperature as measured and a corresponding change in value of said second signal from a desired temperature range, varying the speed of the rotating grate in such a manner that the speed is lowered in case of an excessively high temperature and increased in case of an insufficiently high temperature, said temperature range varying with time;
(f) also monitoring an oxygen-feed rate of oxygen fed to said bed and producing a corresponding third signal, controlling the speed of the rotating grate with said third signal to increase the same in case of a higher oxygen supply rate;
(g) interrupting changes in the speed of the rotating grate for time intervals during which the lock chamber container is being emptied; and
(h) automatically controlling and varying said speed with a computer preprogrammed with said temperature range, said computer being supplied with said first, second and third signal.

4,608,060

SEPARATION OF POLAR GASES FROM NONPOLAR GASES

Santi Kulprathipanja, and Sudhir S. Kulkarni, both of Hoffman Estates, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 15, 1985, Ser. No. 723,398
Int. Cl.[4] B01D *53/22*
U.S. Cl. 55—16 **10 Claims**

1. A process for the separation of a polar gas from a nonpolar gas in a feed mixture containing said gases which comprises contacting said mixture with the upstream face of a multicomponent membrane which comprises a mixture of a glycol plasticizer having a molecular weight of from about 200 to about 600 and an organic polymer cast on a porous support, said support having a ratio of total surface area to total pore cross-sectional area of from about 5:1 to about 900:1, at separation conditions, which said polar gas has a greater steady state permeability than said nonpolar gas, and recovering the permeate which emanates from the downstream face of said membrane, said permeate comprising a product mixture in which the proportion of polar gas to nonpolar gas is greater than the proportion of polar gas to nonpolar gas in said feed mixture.

4,608,061

NORMAL BUTANE/ISO-BUTANE SEPARATION

Warren K. Volles, Mt. Kisco, and Nelson A. Cusher, Carmel, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1985, Ser. No. 749,784
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—26 **21 Claims**

1. An improved pressure swing adsorption process for the separation of iso-butane from normal butane in an adsorption system having at least three adsorbent beds, each bed of which undergoes, on a cyclic basis, a processing sequence comprising:
(a) introducing a feed gas mixture of iso-butane and normal butane at an upper adsorption pressure to the feed end of the bed capable of selectively adsorbing normal butane as the more selectivity adsorbable component of the gas mixture, while iso-butane as the less readily adsorbable component passes through the bed and is discharged from the discharge end thereof, such feed gas introduction being continued as a normal butane adsorption front is formed in the bed and passes through the bed from the feed end thereof and breaks through at the discharge end of the bed, a portion of the iso-butane effluent stream thus discharged being diverted for passage as purge gas to another bed in the system;
(b) countercurrently depressurizing said bed with release of gas from the feed end thereof, thereby depressurizing said bed to an intermediate pressure, said released gas being passed to another bed initially at a lower pressure for pressure equalization at said intermediate pressure;
(c) further countercurrently depressurizing said bed with release of additional amounts of gas from the feed end thereof, thereby depressurizing said bed to a lower desorption pressure, the gas released being recovered as normal butane product gas;
(d) countercurrently purging said bed by the addition of iso-butane purge gas to the discharge end thereof, thereby purging residual normal butane present in the void spaces of the bed to enhance the recovery of normal butane product gas and the purity thereof;
e) partially repressurizing said bed by the passage of counter-

current depressurization effluent gas from a bed in the system initially at a higher pressure for pressure equalization therebetween at said intermediate pressure level; and

(f) further repressurizing said bed from the intermediate pressure to said upper adsorption pressure by the addition of feed gas thereto,

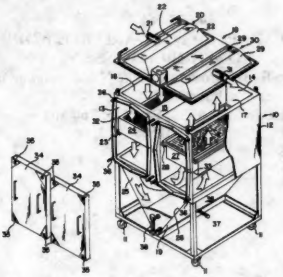
whereby enhanced bed utilization and productivity are achieved at advantageous adsorbent and captial equipment requirements, and advantageous operating expenses, for the desired gas separation operation.

4,608,062

CONTAMINATED AIR/WATER RECOVERY APPARATUS

Joel Hughes, Wilmington, N.C., assignor to Container Products Corporation, Wilmington, N.C.

Filed Mar. 13, 1985, Ser. No. 711,195
Int. Cl.[4] B01D *19/00, 46/12, 50/00*
U.S. Cl. 55—186 **8 Claims**



1. A mobile contaminated air/water recovery apparatus adapted to be used with a vacuum powered recovery system, comprising,

(a) a cabinet having an open top and a partially opened side wall,

(b) an interior divider forming compartments within said cabinet,

(c) a fluid collection tank closing the bottom of said cabinet with said compartments arranged in side by side relation and stacked upon said tank,

(d) a top closure for said cabinet divided into separate sections one for each of said compartments so as to provide access and egress from respective compartments,

(e) horizontally disposed filter means in each of said compartments, whereby contaminated air downwardly flows through one filter and upwardly flows through a filter downstream of said one filter,

(f) means removably supporting said filter means in each of said compartments whereby said filter means are accessible through said partially opened side wall of said cabinet, and

(g) means for closing said partially open side wall and each of said compartments.

4,608,063

EXHAUST SYSTEM FOR CHEMICAL VAPOR DEPOSITION APPARATUS

Takashi Kurokawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

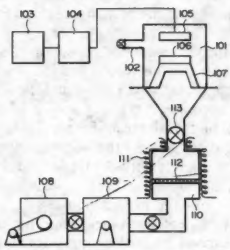
Filed Nov. 8, 1984, Ser. No. 669,527
Claims priority, application Japan, Nov. 25, 1983, 58-220779
Int. Cl.[4] B01D *35/18*
U.S. Cl. 55—208 **1 Claim**

1. A CVD apparatus comprising:

(1) a deposition chamber in which gas introduction means and gas discharge means are provided;

(2) a discharge electrode provided within said deposition chamber;

(3) supporting means for supporting a substrate on which deposition layer is formed and which is arranged opposite to said electrode provided within said deposition chamber; and



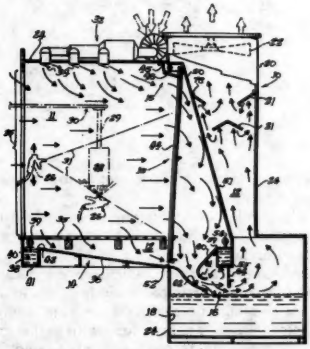
(4) a fine powder collecting chamber having a filter means for collecting a fine powder and a heater for heating said fine powder collecting chamber, mechanical booster pump means, and oil rotary pump means, said fine powder collecting chamber, said mechanical booster pump means and said oil rotary pump means being arranged in an exhaust path downstream of said gas discharge means in the order named.

4,608,064

MULTI-WASH SPRAY BOOTH AND METHOD OF CAPTURING AIR BORNE PARTICLES

Stanley C. Napadow, Elgin, Ill., assignor to Protectaire Systems Co., Elgin, Ill.

Filed Jan. 3, 1985, Ser. No. 688,572
Int. Cl.[4] B01D *47/10*
U.S. Cl. 55—238 **16 Claims**



1. In a spray booth for capturing air borne particles by wetting the same with a liquid, said spray booth comprising:

a housing having a forward spraying chamber in which will be present air borne spray particles,

a first verticle baffle wash means located rearwardly of the spraying chamber and having a plurality of staggered baffle plates through which a first air stream flows rearwardly in a generally horizontal path from the spray chamber,

water application means for flowing a cascade of water down the panels for trapping air borne spray particles being carried by the first air stream,

a floor in said spray chamber having air flow passages therethrough through which a second air stream flows in a

downward path through the floor passages at a location forwardly of said first vertical baffle wash means,

a second wash means for washing the second air stream for removing air borne spray particles from the second air stream,

means for directing the first air stream downwardly and means for directing the second air stream rearwardly for convergence with the first air stream to form combined air streams,

a common throat means for receiving the air flow of said combined air streams for raising the velocity of the combined air streams to cause liquid flowing through the throat to become air borne,

a turbulent liquid wash means for receiving the combined air streams and for mixing the same turbulently with liquid particles to form a turbulent water and an air wash for removing air borne particles,

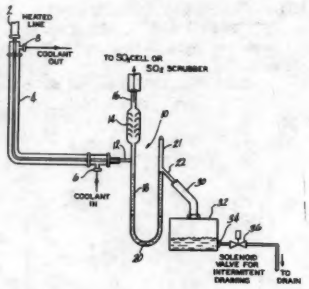
an eliminator passage in said housing for receiving the air from the turbulent wash means and for eliminating liquid particles carried by air flowing prior to discharge of the air from the booth.

4,608,065

MOISTURE REMOVAL FOR STACK GAS MONITOR

Michael M. Lai, Friendswood, Tex., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 3, 1985, Ser. No. 719,518
Int. Cl.[4] B01D *45/08*
U.S. Cl. 55—269 **4 Claims**



1. A system for removing moisture from a gas, said system comprising:

(a) an inlet conduit or conducting moisture-bearing gas into said system, said inlet conduit opening into a vertically disposed drain conduit;

(b) a moisture condensing chamber disposed vertically above said drain conduit and said inlet conduit, said drain conduit opening into said moisture condensing chamber and being vertically aligned therewith so that gas entering said drain conduit through said inlet conduit will rise through said drain conduit into said condensing chamber, said condensing chamber including a plurality of inwardly extending projections which increase the internal surface area of said condensing chamber and on which drops of moisture will condense from the gas rising through said condensing chamber, said projections having downwardly directed ends operable drip moisture therefrom toward said drain conduit whereby the condensed moisture will flow into said drain conduit;

(c) a U-shaped trap disposed vertically below said drain conduit and communicating with said drain conduit, said trap being operable to receive condensate flowing into said drain conduit, and said trap, when filled with liquid, being operable to prevent incoming gas from moving through said drain conduit and said trap, whereby gas entering said drain conduit via said inlet conduit can only pass through said condensing chamber;

(d) an outlet conduit opening into a leg of said trap opposite said drain conduit, said outlet conduit being disposed at a level on said leg which is vertically below the level of said inlet conduit, said outlet conduit being operable to discharge liquid from said trap upon influx of condensate to said trap from said condensing chamber; and

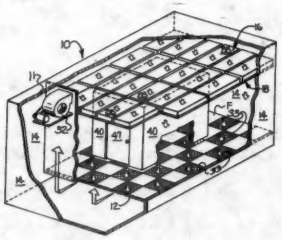
(e) a dry gas outlet disposed vertically above and opening into said condensing chamber.

4,608,066

CLEAN ROOM ADAPTED FOR VARIABLE WORK AREA CONFIGURATIONS

George H. Cadwell, Jr., Bounts Creek, N.C., assignor to Flanders Filters, Inc., Washington, N.C.

Filed Jul. 31, 1985, Ser. No. 760,501
Int. Cl.[4] B01D *25/22*
U.S. Cl. 55—385 A **12 Claims**



1. A clean room having provision for supplying filtered air vertically therethrough under substantially laminar flow conditions and characterized by the ability to be divided into separated work areas of variable configurations, and comprising

a clean room enclosure including a top wall, a bottom wall, and bounding side walls,

a filter bank positioned parallel to and spaced below said top wall, said filter bank comprising a supporting latticework composed of interconnected lengthwise and crosswise members which define a plurality of rectangular open areas, a plurality of supporting tie rods connected between said top wall of the clean room and said latticework, and a plurality of high efficiency air filters positioned on said latticework with one of the filters covering each of said open areas,

a plurality of wall panels suspended downwardly from said latticework, with each wall panel being aligned below one of either said lengthwise or crosswise members of said latticework, and

attachment means releasably supporting each of said wall panels, with each attachment means being disposed coaxially with and operatively connected to one of said tie rods, and such that the weight of the suspended wall panels is borne directly by said tie rods and not by said latticework, and whereby said wall panels may be positioned within said clean room in a selected configuration to define separated work areas.

4,608,067

PERMANENT GAS REFRIGERATION METHOD

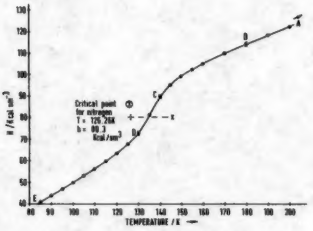
John Marshall, Ascot, England, assignor to The BOC Group, plc, Surrey, England

Filed Aug. 2, 1984, Ser. No. 636,954

Claims priority, application United Kingdom, Aug. 4, 1983, 8321073

Int. Cl.[4] F25J *1/00, 1/02*

U.S. Cl. 62—9 11 Claims



1. A method of refrigerating a permanent gas by heat exchanging a stream of said gas at a relatively high pressure with a main stream of work-expanded working fluid flowing counter to said high pressure stream, and thereby reducing the temperature of said high pressure stream to its critical temperature or a temperature therebelow, wherein the said main stream is supplemented by at least two work-expanded streams of working fluid introduced into heat exchange the permanent gas stream on the gaseous transitional section of relationship with the permanent gas stream at temperatures of the temperature-enthalpy curve of the permanent gas stream or within 5° K. beyond either end of such section, but with no work expanded stream of working fluid other than said main work expanded stream being used to refrigerate the permanent gas stream at its temperature more than 5° K. below the lower limit of the gaseous transitional section whereby the temperature of the working fluid as it is heated is more closely matched to that of the permanent gas stream as it is cooled along the said gaseous transitional section.

4,608,068

RECOVERY OF C_{3+} HYDROCARBONS

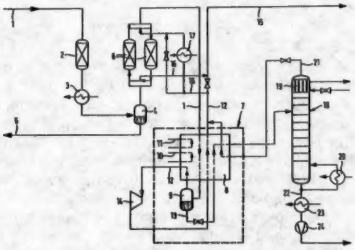
Heinz Bauer, Neuried, and Aldo Belloni, Puchheim, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,742

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1984, 3408760

Int. Cl.[4] A25J *3/02*

U.S. Cl. 62—18 23 Claims



1. In a process for the recovery of C_{3+} hydrocarbins from a feed stream containing hydrogen and C_1 to at least C_5 hydrocarbons, comprising cooling and partially condensing the feed stream; separating the partially condensed feed stream into a liquid fraction and a gaseous fraction; expanding the gaseous fraction to produce a colder fluid, and fractionating the liquid fraction in a rectification column to obtain a product stream consisting essentially of C_{3+} hydrocarbons and a residual gas stream product containing perdominantly C_{2-} hydrocarbons, the improvement comprising passing: (a) the gaseous fraction prior to expansion, (b) the liquid fraction, prior to rectification, and (c) the gaseous fraction after expansion, all in indirect heat exchange relationship with the feed stream to be cooled wherein said rectification is conducted at a temperature sufficiently high to enable an external-refrigeration cycle having a temperature above about −50° C. to be employed for partially condensing the overhead gas to provide reflux for the rectification column.

20. An apparatus suitable for separating a refinery waste gas, comprising a feed conduit for the feed stream integrated with prepurification means, a heat exchanger, and phase-seperating means, the liquid-collecting chamber of the latter being connected to a rectification column, and the gas-collecting chamber of the phase separating means being connected to expansion means, wherein the conduits connecting the phase-separating means (9) and the rectification column (18) or, the expansion means (14), are passed through the heat exchanger (8), the improvement which comprises a heat exchanger (36) being connected to the outlet of the expansion device (14) and being disposed in the gas space of the phase-separating means (9), said heat exchanger (36) being designated so as to permit said rectification to be conducted at a temperature sufficiently high to enable an external-refrigeration cycle having a temperature above about −50° C. to be employed for partially condensing the overhead gas to provide reflux for the rectification column.

4,608,069

SEPARATION OF HIGHER BOILING IMPURITIES FROM LIQUEFIED GASES

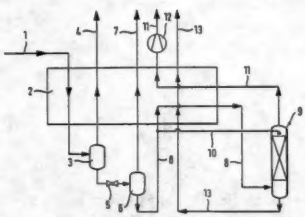
Hans Becker, Munich, and Herwig Landes, Ingolstadt, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Mar. 12, 1985, Ser. No. 710,808

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1984, 3408997

Int. Cl.[4] F25J *3/02*

U.S. Cl. 62—26 22 Claims



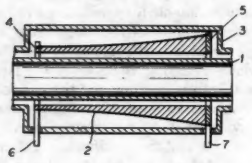
1. A process for a low temperature separation of a higher boiling component from a liquefied gas by rectification, comprising vaporizing a partial stream of the liquefied gas, providing a heat exchanger specifically designed to enable replacement of the sump heater or reboiler of the column by superheating the resultant vapor in said heat exchanger and introducing the resultant superheated vapor into the lower portion of a rectification column, passing the remainder of the liquefied gas in the liquid phase into the upper portion of the rectification column, and conducting rectification so as to withdraw said higher boiling component as bottoms and to recover vaporized liquefied gas depleted in said higher boiling component, as overhead gas product.

4,608,070

PROCESS FOR MANUFACTURING OPTICAL-FIBRE PREFORMS AT HIGH DEPOSITION RATE

Giacomo Roba, Beinasco-Torino, Italy, assignor to Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Sep. 12, 1984, Ser. No. 650,297
Claims priority, application Italy, Sep. 15, 1983, 67954 A/83
Int. Cl.[4] C03B *37/018, 37/027*
U.S. Cl. 65—3.12 2 Claims



1. A process for producing optical fibers which comprises the steps of:

forming a preform by:

producing glass particles by a reaction between vapor-phase reactants,

rotating a supporting glass tube having an internal surface around its axis,

initiating said reaction between the reactants in an input end of the tube in a region with constant temperature Ti,

simultaneously depositing said glass particles along an entire length L of the tube by heating the tube over its entire length L at once to a temperature T(r,x) which is a function of the distance from the input end given by the relationship:

$$T(r,x) = T_i \exp\left(-\frac{r^2 v_x}{2L\nu K} \cdot \frac{\frac{x}{L}}{1-\frac{x}{L}}\right)$$

where:

exp represents the natural exponent base and the parenthetical expression the power thereof,

T(r,x) is the temperature of the tube at a distance r from the axis, where r is the internal tube radius, and at a distance x from the input end,

T_i is the temperature at the input end of the tube, v_x is the axial component of the speed of the glass particles entrained through said tube by a gas,

L represents the distance from the input end of tube at which all the particles have been deposited,

γ is the kinematic viscosity of vapor flow in the tube, X varies from X=O to X=L, and

K is a proportionality coefficient, so as to obtain a layer of deposited particles with constant thickness;

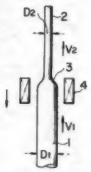
thermally collapsing said preform; and drawing said fibers from the collapsed tube.

4,608,071

METHOD FOR REDUCING DIAMETER OF A GLASS ROD OR TUBE BY DRAWING

Kiyoshi Yokokawa; Kazuo Koya, and Syouji Hosino, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1985, Ser. No. 691,984
Claims priority, application Japan, Jan. 17, 1984, 59-6120
Int. Cl.[4] C03B *37/027, 23/13*
U.S. Cl. 65—13 5 Claims



1. A method for reducing the diameter of a rod or tube of glass which comprises the steps of:

(a) holding the base rod or tube of glass in a substantially vertical disposition by gripping at the upper and lower ends thereof with an upper and a lower gripping means, respectively;

(b) heating a section of the glass rod or tube with an outer heating means so as to bring the glass material of the rod or tube in the section to a softened and plastically deformable state;

(c) moving the upper gripping means upwardly along the axial direction of the glass rod or tube while the lower gripping means is not moved upwardly along the axial direction of the glass rod or tube or is moved upwardly at a velocity smaller than the upward moving velocity of the upper gripping means so that the glass rod or tube in the heated section is drawn to be imparted with a reduced diameter;

(d) successively decreasing the distance between the outer heating means and the lower gripping means; and

(e) cooling the heated and softened glass rod or tube with plastic deformability in the section drawn and imparted with a reduced diameter to solidify.

4,608,072

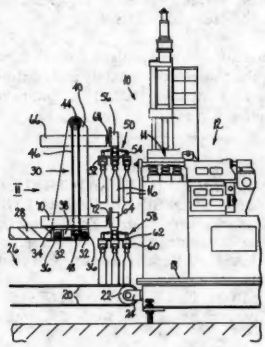
METHOD AND APPARATUS FOR TRANSFERRING ARTICLES OF GLASSWARE FROM A BLOW STATION TO CONVEYOR MEANS

Frank A. Fenton, Doncaster, England, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Jul. 15, 1985, Ser. No. 755,131
Claims priority, application United Kingdom, Aug. 3, 1984, 8419916
Int. Cl.[4] C03B *9/28*
U.S. Cl. 65—79 9 Claims

6. A method of transferring successively-formed articles of glassware from a blow station of a glassware forming machine to conveyor means using a first and a second gripping means by which alternately-formed articles or groups of articles are transferred, the method comprising moving the first gripping means transversely of the blow station to a first position in alignment with and at a higher lever than the blow station and simultaneously moving the second gripping means transversely of the blow station to a second position out of alignment with the blow station and above the conveyor means, moving the first gripping means from the first position to a third position above the blow station at which the first gripping means is caused to grip an article or a group of articles, moving the second gripping means downwardly from the second position to a fourth position at which the second grip-

ping means is caused to release an article or a group of articles on to the conveyor means, moving the first gripping means from the third position to the first position, moving the second gripping means from the fourth position to the second position, moving the first gripping transversely of the blow station to a fifth position out of alignment with the blow station and above the conveyor means and simultaneously moving the second gripping means transversely of the blow station from the second position to the first position, moving the first gripping means downwardly from the fifth position to a sixth position at



which the first gripping means is caused to release an article or a group of articles on to the conveyor means, moving the second gripping means from the first position to the third position at which the second gripping means is caused to grip an article or a group of articles, moving the first gripping means from the sixth position to the fifth position, moving the second gripping means from the third position to the first position, and repeating the above-mentioned movements in timed relationship to the operation of the machine so that all articles formed are transferred.

4,608,073

ROLLER CONVEYOR FOR A GLASS FURNACE

James Ford, Oradell, N.J., and Douglas M. Canfield, Suffern, N.Y., assignors to Casso Solar Corporation, Pomona, N.Y.

Continuation-in-part of Ser. No. 531,906, Sep. 12, 1983, Pat. No. 4,528,016. This application Jul. 3, 1985, Ser. No. 752,306

Int. Cl.[4] C03B *27/00*

U.S. Cl. 65—163 **10 Claims**

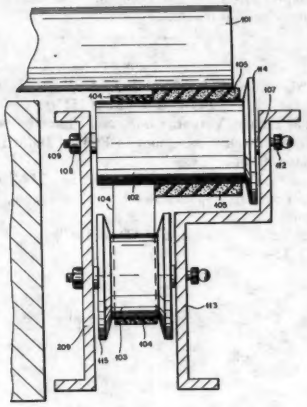
1. A furnace for the heat treatment of glass including annealing, heat strengthening, tempering and bending of glass which comprises:

a housing defining an elongated furnace chamber having an inlet and an outlet;

a roller conveyor between said inlet and said outlet and including respective rows of stub rollers disposed along each longitudinal side of said housing flanking a path between said inlet and said outlet, a lower row of deflecting rollers below one of said rows of stub rollers with the rollers of the lower row being positioned between the stub rollers of said one row, a drive belt being looped over each stub roller of said one row and under each roller of the lower row therebetween, said stub rollers each being provided with at least one band of a heat resistant elastomeric material coating at least a portion of the surface thereof;

fused silica support rollers spanning said conveyor with each support roller exclusively upon the respective bands of two stub rollers on each side of said housing, said bands being positioned relative to said belt so as to hold said fused silica support rollers out of engagement with the respective belt;

means for driving said belt to oscillate glass objects carried by said support rollers back and forth in said housing; and



an array of infrared heaters mounted in said housing at least above said conveyor.

4,608,074

GOB DISTRIBUTOR

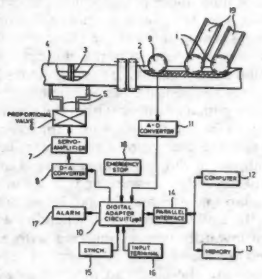
Werner-Dieter Knoth; Helmut Hüllen, both of Essen, and Klaus Kopatz, Bottrop, all of Fed. Rep. of Germany, assignors to VEBA-GLAS AG, Essen, Fed. Rep. of Germany

Filed Nov. 21, 1984, Ser. No. 673,776

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1983, 3342062

Int. Cl.[4] C03B *9/40*

U.S. Cl. 65—164 **8 Claims**



1. A gob distributor for an IS machine for manufacturing hollow glass articles, comprising:

a hydraulic drive operatively connected to a gob distributor member in such a way so as to move the gob distributor in angular oscillating movement;

valve means including a reversing valve operatively connected to said hydraulic drive for controlling the flow of hydraulic medium in said hydraulic drive;

computer means including a memory for actuating said valve means;

a digital adapter circuit for operating said valve means;

a digital-analog converter operatively connected between said valve means and said digital adapter circuit;

a position control device responsive to the position of said member in the form of an angle coder;

an analog-digital converter operatively connected between said digital adapter circuit and said angle coder; and

a parallel interface operatively connecting said digital adapter circuit to said computer means and to a synchronizer for said machine.

4,608,075

PLUNGER MECHANISM FOR USE IN A GLASSWARE FORMING MACHINE

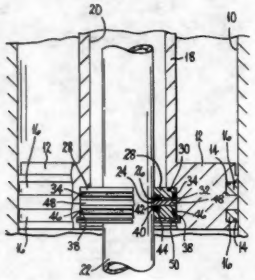
Albert J. Trahan, Vernon, Conn., and Vladimir Vajda, Nussbaumen, Switzerland, assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Mar. 22, 1985, Ser. No. 714,780

Claims priority, application United Kingdom, Apr. 6, 1984, 8408996

Int. Cl.[4] C03B *11/06*

U.S. Cl. 65—362 4 Claims



1. A plunger mechanism for use in a glassware forming machine, the mechanism being for use in moving a plunger into and out of a mould cavity of a mould of the machine, the plunger mechanism comprising a cylinder, a piston movable in the cylinder towards or away from the mould cavity upon the introduction of fluid under pressure into the cylinder, a piston rod projecting from the piston towards the mould cavity, the piston rod being arranged to carry a plunger so that movement of the piston causes movement of the plunger towards or away from the mould cavity, a passage passing centrally through the piston and the piston rod, the passage being arranged to communicate either with a chamber within the plunger or with the mould cavity, a tube extending through the cylinder and entering the passage, the tube being fixed against movement with the piston and piston rod and being arranged to be connected to a source of air under pressure or to a vacuum source, and sealing means arranged to seal the gap between the exterior of the tube and the wall of the passage, wherein the sealing means comprises an inwardly contracting ring with an overlapping joint mounted in a recess in the piston or in a recess in a carrier member secured to the piston so that the ring makes sealing contact around the tube, and a ring of resilient material encircling the inwardly-contracting ring and sealing the gap between the inwardly-contracting ring and the wall of the recess.

4,608,076

AMINOOXYACETIC ACID (AOA) AS A PLANT GROWTH INHIBITOR

Richard J. Gladon, and David S. Koranski, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 26, 1984, Ser. No. 593,272

Int. Cl.[4] A01N *37/02*

U.S. Cl. 71—76 4 Claims

1. A method of inhibiting bedding plant height growth without killing the plant, and without having any significant impact on flowering, said method comprising:

spraying on the plant leaves of bedding plants to the point of run-off at a point in time when the plant is beyond the seed leaf stage, and approximately from about the first true leaf stage to the third true lead stage, from about 1 millimolar concentration to about 24 millimolar concentration of a solution of aminooxyacetic acid.

4,608,077

PROCESS FOR PROMOTING AND REGULATING PLANT GROWTH WITH CAULERPIN

John G. Schwede, 875 56th Ave. South, St. Petersburg, Fla. 33705

Filed Apr. 5, 1985, Ser. No. 720,520

Int. Cl.[4] A01N *43/38*

U.S. Cl. 71—77 10 Claims

1. The method of promoting plant growth comprising the step of treating the plant seed intimately and continuously with an aqueous solution containing 0.001-1 milligrams of Caulerpin per liter of solution for a period of at least one day.

4,608,078

BREFELDIN A DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Rolf-Dieter Acker, Leimen; Rudolf Karl, Limburgerhof, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

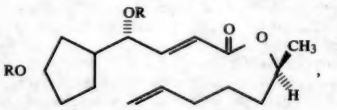
Filed Dec. 13, 1983, Ser. No. 560,965

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247379

Int. Cl.[4] C07D *313/00;* A01N *43/22*

U.S. Cl. 71—88 7 Claims

1. A brefeldin A derivative of the formula



(I)

where R is C_1–C_6-alkyl, C_7–C_9-aralkyl which is unsubstituted or substituted by halogen or C_1–C_4-alkyl, benzoyl which is unsubstituted or substituted by halogen or C_1–C_4-alkyl, a radical of the formula $(R^1O)_2P(O)$—, where R^1 is hydrogen or C_1–C_4-alkyl, or a radical $R^2R^3R^4Si$, where R^2, R^3 and R^4 are identical or different and are each C_1–C_6-alkyl.

4,608,079

IMIDAZOLIDINONES, AND IMIDAZOLIDIENTHIONES, PROCESS AND INTERMEDIATES FOR THE PREPARATION THEREOF, AND USE OF SAID COMPOUNDS AS HERBICIDAL AGENTS

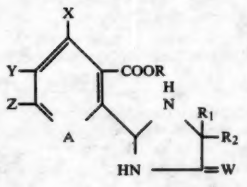
Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 519,613, Aug. 2, 1983, abandoned. This application Jun. 4, 1984, Ser. No. 616,741

Int. Cl.[4] A01N *43/50;* C07D *401/04, 233/02*

U.S. Cl. 71—92 31 Claims

1. A compound having the structure:



wherein

R is hydrogen;

C_1–C_{12} alkyl optionally substituted with one of the following groups: C_1–C_4 alkoxy, halogen, hydroxyl, C_3–C_6 cycloalkyl, benzyloxy, furyl, phenyl, halophenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, nitrophenyl, carboxyl, C_1–C_3 alkoxycarbonyl, cyano or tri(C_1–C_3)alkylammonium;

C_3–C_{12} alkenyl optionally substituted with one of the following groups: C_1–C_3 alkoxy, phenyl, halogen, or C_1–C_3 alkoxycarbonyl or with two C_1–C_4 alkoxy groups or two halogen atoms;

C_3–C_6 cycloalkyl optionally substituted with one or two C_1–C_3 alkyl groups;

C_3–C_{10} alkynyl or,

a cation of alkali metals or organic-ammonium;

R_1 and R_2 each represents C_1–C_3 alkyl or cyclopropyl, with the proviso that the sum of the number of carbon atoms in R_1 and R_2 is 2 to 5; and when R_1 and R_2 are taken together with the carbon to which they are attached, they may form a C_3–C_6 cycloalkyl ring optionally substituted with methyl;

A is nitrogen or $—CR_3$;

W is oxygen or sulfur;

X is hydrogen, halogen or methyl;

Y and Z are each hydrogen, halogen, C_1–C_6 alkyl, C_1–C_4 hydroxyalkyl, C_1–C_6 alkoxy, C_1–C_4 alkylthio, phenoxy, C_1–C_4 haloalkyl, OCF_2CHF_2, OCF_3, $OCHF_2$, nitro, cyano, NR_4R_5, C_3–C_8 straight or branched alkenyloxy optionally substituted with one to three halogens, C_3–C_8 straight or branched alkynyloxy optionally substituted with one to three halogens, or phenyl optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen;

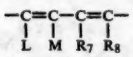
R_3 is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, CF_3, NO_2, OCF_3, $OCHF_2$ or OCF_2CHF_2;

R_4 is hydrogen or C_1–C_4 alkyl;

R_5 is C_1–C_4 alkyl; and, when taken together, Y and Z may form a ring in which YZ is represented by

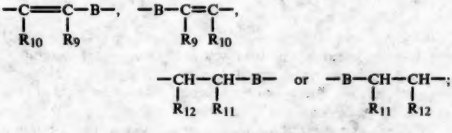
(1) the structure: $—(CH_2)_n—$, where n is an integer of 2, 3 and 4, provided that when A is $—CR_3$, then X is hydrogen; or

(2) by the structure:



where, when A is CR_3, L, M, R_7 and R_8 each represent hydrogen, halogen, C_1–C_4 alkyl or C_1–C_3 alkoxy, and X is hydrogen; and when A is nitrogen, L, M, R_7 and R_8 each represent hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkyl, NO_2, CN, phenyl, phenoxy, amino, C_1–C_4 alkylamino, dialkyl(C_1–C_4)amino, OCF_3, $OCHF_2$, OCF_2CHF_2, chlorophenyl, methylphenyl, C_3–C_8 straight or branched alkenyloxy optionally substituted with one to three halogens, C_3–C_8 straight or branched alkynyloxy optionally substituted with one to three halogens, or phenoxy substituted with one Cl, CF_3, NO_2 or CH_3 group, with the proviso that only one of L, M, R_7 or R_8, may represent a substituent other than hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; or

(3) by the structures:



where B is oxygen or sulfur; R_9 and R_{10} each represent hydrogen, halogen, phenyl, or C_1–C_4 alkyl; R_{11} and R_{12} each represent hydrogen, C_1–C_4 alkyl and phenyl;

and when R_1 and R_2 are not the same, the optical or cis- or trans-isomer thereof or except when R is a salt-forming cation, the acid addition salts thereof.

4,608,080

HERBICIDAL 2-PHENYL-4,5,6,7-TETRAHYDRO-2H-INDAZOLES

Toru Haga, Takarazuka; Eiki Nagano, Nishinomiya; Ryo Sato, Toyonaka, and Ryo Yoshida, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

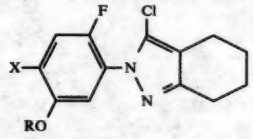
Filed May 8, 1985, Ser. No. 731,784

Claims priority, application Japan, May 18, 1984, 59-101341

Int. Cl.[4] A01N *43/56;* **C07D** *231/56*

U.S. Cl. 71—92 **7 Claims**

1. A compound of the formula:



wherein R is a mono- or di-halo(C_3–C_4)alkenyl group or a mono-halo(C_3–C_4)alkynyl group and X is a chlorine atom or a bromine atom.

5. A method for controlling weeds which comprises applying a herbicidally effective amount of the compound according to claim 1 to the area where weeds grow or will grow.

4,608,081

HERBICIDAL 2-[4-(4-CYANOPHENOXY)-PHENOXY]-ALKANOIC ACID AMIDES

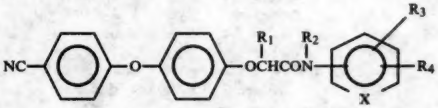
Shinzo Someya, Tokorozawa; Rokuro Akahira, Kurume; Yuji Nonaka, Tokuyama; Akira Nakanishi, Shinnanyo, and Mikio Ito, Tokuyama, all of Japan, assignors to Kanesho Company Limited, Tokyo and Toyo Soda Manufacturing Company Limited, Shinnanyo, both of, Japan

Filed Jun. 22, 1984, Ser. No. 623,519

Int. Cl.[4] A01N *43/40, 37/34;* **C07D** *213/74;* **C07C** *121/52*

U.S. Cl. 71—94 **27 Claims**

1. A 2-[4-(4-cyanophenoxy)-phenoxy]-alkanoic acid amide of the formula (I)



wherein

R_1 is hydrogen or methyl,

R_2 is selected from the group consisting of hydrogen and lower alkyl,

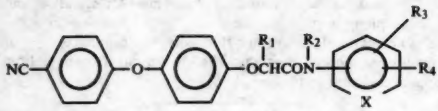
R_3 is selected from the group consisting hydrogen, halogen, lower alkyl, lower alkoxy, cyano, nitro, trifluoromethyl, lower alkylaminocarbonyl and lower alkanesulfonyloxy,

R_4 is selected from the group consisting of hydrogen, halogen and lower alkyl, and

X is selected from the group consisting of methine and nitrogen.

22. A herbicide comprising:

a herbicially-effective amount of a 2-[4-(4-cyanophenoxy)-phenoxy]-alkanoic acid amide of the formula (I)



wherein

R_1 is selected from the group consisting of hydrogen and methyl,

R_2 is selected from the group consisting of hydrogen and lower alkyl,

R_3 is selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, cyano, nitro, trifluoromethyl, lower alkylaminocarbonyl and lower alkanesulfonyloxy,

R_4 is selected from the group consisting of hydrogen, halogen and lower alkyl, and

X is selected from the group consisting of methine and nitrogen; and

a diluent.

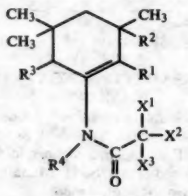
4,608,082

HERBICIDAL CYCLOALKENYL ACETAMIDES

Todd A. Craig, Raleigh, and John J. Jachetta, Pittsboro, both of N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 19, 1985, Ser. No. 702,652
Int. Cl.[4] A01N *37/18*; C07C *103/37*
U.S. Cl. 71—118 **27 Claims**

1. A compound of the formula



wherein

R^1 and R^3 are individually hydrogen; cyano; or alkyl, alkenyl, alkoxyalkyl, cyanoalkyl or haloalkyl of from 1 to 10 carbon atoms, linear, branched or cyclic;

R^2 is hydrogen; alkyl, alkoxyalkyl, alkenyl, alkynyl, haloalkyl, cyanoalkyl or haloalkenyl of from 1 to 10 carbon atoms, linear, branched or cyclic; NR^1, or $S(O)_mR^1$ wherein m is 0, 1, 2 or 3 and R^1 is as defined above;

R^1, R^2 and R^3 cannot all be hydrogen;

R^4 is hydrogen, alkyl, alkoxy, alkenyl, alkynyl, haloalkyl, cyanoalkyl or haloalkenyl of from 1 to 10 carbon atoms, linear, branched or cyclic;

or 2)$_n$OR^5, wherein R is hydrogen, or alkyl, alkoxy, alkenyl, alkynyl, haloalkyl, cyanoalkyl or haloalkenyl of from 1 to 10 carbon atoms, linear, branched or cyclic; n is greater than 1; and R^5 is hydrogen, cyano, or alkyl, alkenyl, alkoxyalkyl, cyanoalkyl or haloalkyl of from 1 to 10 carbon atoms, linear, branched or cyclic; and

X^1, X^2 and X^3 are individually hydrogen, methyl, chlorine, fluorine or bromine.

18. A method for selectively controlling undesirable vegetation in crops of cultivated plants which comprises applying to the locus of the crops an herbicidally effective amount of the compound of claim 1.

4,608,083

METHOD FOR RECOVERING THE VALUABLE METAL CONTENT OF CONTAMINATED COPPER RAW MATERIAL

Sven A. Holmström, Ursviken, and Leif Johansson, Skellefteå, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Sep. 12, 1985, Ser. No. 775,403
Claims priority, application Sweden, Sep. 28, 1984, 8404863
Int. Cl.[4] C22B *11/00*
U.S. Cl. 75—83 **14 Claims**

1. A method for recovering the valuable metal content from a mixture of copper raw materials of which at least one is sulphide bearing, said materials containing impurity from the group consisting of arsenic, antimony, bismuth, mercury, tin, halogens and mixtures thereof comprising:

(a) adjusting the halogen content of the mixture such that the amount of halogen is at least stoichiometric with respect to the remaining impurity in the mixture;

(b) heating the mixture in a furnace to a temperature of at least 500° C. and below the melting point of the mixture while maintaining the mixture in contact with gas produced therefrom by said heating whereby substantially all the impurity is expelled;

(c) heating the mixture to a temperature at which smelting occurs whereby a slag and a copper matte containing the valuable metal content is formed and wherein heating the mixture, expelling the impurity and smelting the mixture is conducted in the same furnace; and

(d) recovering the valuable metal content from the copper matte.

4,608,084

RECOVERY OF COBALT AND CHROMIUM

Richard A. Scheithauer; Michael J. Miller; Clarence D. Vanderpool, and Martin B. MacInnis, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 1, 1985, Ser. No. 718,257
Int. Cl.[4] C22B *23/04, 34/32*
U.S. Cl. 75—101 R **6 Claims**

1. A process for recovering cobalt and chromium from a cobalt and chromium containing alloy, said process comprising:

(a) digesting said alloy in concentrated hydrochloric acid at a sufficient temperature for a sufficient time to form a first solution containing the major portion of said cobalt and said chromium and the major portion of any iron and nickel present in said alloy and a first solid;

(b) separating said first solution from said first solid;

(c) adding oxalic acid to said first solution in an amount sufficient to subsequently precipitate the major portion of the cobalt in said first solution and the major portion of any iron and nickel contained therein;

(d) adjusting the pH of the resulting oxalic acid treated first solution to from about 1 to about 2 with a base and maintaining the temperature of the resulting pH adjusted oxalic acid treated first solution below about 20° C. for a sufficient time to form a second solid containing the major portion of the cobalt and any iron and nickel which is present in said first solution and a second solution containing the major portion of the chromium which is present in said first solution;

(e) separating said second solid from said second solution;

(f) washing said second solid with sufficient water to remove any water soluble impurities;

(g) separating the resulting washed second solid from the resulting wash water;

(h) contacting said washed second solid with a calcium chloride solution of sufficient calcium chloride concentra-

tion, at a sufficient temperature, for a sufficient time to form a third solution containing the major portion of the cobalt which was present in said second solid and a third solid; and;

(i) separating said third solution from said third solid.

4,608,085

SELF-LUBRICATING SINTERED BEARING AND PROCESS FOR THE PRODUCTION THEREOF

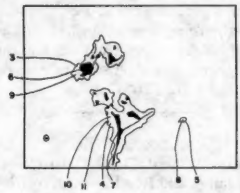
Michel Eudier, Paris, and Hassan Youssef, Taverny, both of France, assignors to Alliages Frittes Metafram, Courbevoie, France

Filed Nov. 28, 1984, Ser. No. 675,694

Claims priority, application France, Nov. 29, 1983, 83 19433

Int. Cl.[4] C22C *9/02*

U.S. Cl. 75—247 **2 Claims**



1. A self-lubricating sintered bearing of antimony bronze consisting essentially of Cu, 1.5 to 4% by weight Sb and 5 to 10% by weight Sn, the ratio of Sn/Sb being 1.3 to 3.5,

said bearing having a structure comprising a matrix having a plurality of dispersed phases therein, said dispersed phases being harder than said matrix, and each comprising a diffused region containing a ternary Cu-Sn-Sb intermetallic composition, and surrounding a microporosity.

4,608,086

MEMBRANE REMOVER/ETCHANT

Paul D. Dodge, Apple Valley, Minn., assignor to Tennant Company, Minneapolis, Minn.

Division of Ser. No. 459,238, Jan. 19, 1983, Pat. No. 4,469,525.

This application Aug. 27, 1984, Ser. No. 644,856

Int. Cl.[4] C08K *3/00*; C11D *7/08*

U.S. Cl. 106—12 **22 Claims**

1. A precoating membrane remover/etchant composition for treating concrete covered with a thin moistureproof organic membrane, first to dissolve the membrane and, after dissolving the membrane, to etch the concrete provided an etching acid in said solution is activated for the concrete etching role, said composition comprising by weight (a) from 1 to 10 parts organic solvent, and 30 to 50 parts a co-solvent therefor, for dissolving the membrane, and said co-solvent also serving the role of a strong acid inhibitor; (b) 5 to 20 parts concentrated weak carboxylic organic acid and 20 to 30 parts concentrated strong mineral acid together with a water content which is insufficient in combination with said solvents to allow substantial ionization of the acid to the effective concrete etching state; said weak acid along with said co-solvent also serving the role of inhibitor for the strong acid; and said solution further comprising (c) a surfactant to induce uniform wetting of the solution when applied to the membrane; said solution being capable of dissolving an organic membrane on a concrete slab, whereafter by adding additional water to said solution the acids become activated effectively to etch the exposed concrete.

4,608,087

HEAT-RESISTANT INORGANIC COMPOSITION

Shigeo Yoshino; Tadashi Zenbutsu, and Hajime Asami, all of Bizen, Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 387,556, Jun. 11, 1982, abandoned.

This application Oct. 24, 1984, Ser. No. 664,100

Claims priority, application Japan, Jun. 19, 1981, 56-92383

Int. Cl.[4] C09D *5/18*

U.S. Cl. 106—18.12 **2 Claims**

1. A heat-resistant inorganic composition which comprises a refractory powder of an inorganic oxide; a powder of an inorganic compound having cation-exchangeability, a layered structure, water swellability and no hydroxy groups; and a binder of sodium silicate; wherein the refractory powder of an inorganic oxide is composed substantially of particles having diameters not exceeding 44 μm; the powder of an inorganic compound having a layered structure is composed substantially of particles having diameters not exceeding 30 μm selected from the group consisting of synthesized mica and phlogopite, the largest particle diameter of which is smaller than the average particle diameter of the refractory powder of an inorganic oxide; the weight ratio of the refractory powder of an inorganic oxide to the inorganic compound having a layered structure is in the range from 10:90 to 90:10; and the amount of binder is in the range from 15 to 50% by weight as a solid based on the total amount of the refractory powder and the powder of an inorganic compound having a layered structure.

4,608,088

DENTURE ADHERENT POWDER

Oddvin Lokken, Rye, N.Y., assignor to Dento-Med Industries Incorporated, North Miami Beach, Fla.

Filed Mar. 22, 1984, Ser. No. 592,116

Int. Cl.[4] C09K *3/00*

U.S. Cl. 106—35 **9 Claims**

1. A denture adherent preparation in powder form, which comprises an admixture of

(a) from about 40% to about 60% of a dental adhesive; and

(b) from about 60% to about 40% of a gel-forming mixture comprising from about 10 to about 20% of a water-soluble alginate, from about 5 to about 20% of a setting agent for the water-soluble alginate, from 0.5 to about 15% of a retarder and from about 5 to about 20% of a filler; all percentages being based on the total weight of the composition.

4,608,089

CEMENT MATRIX COMPOSITES AND METHOD OF MAKING SAME

David M. Gale, and Hyunkook Shin, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 19, 1985, Ser. No. 756,705

Int. Cl.[4] B28B *1/26, 1/52*

U.S. Cl. 106—90 **7 Claims**

1. A method for preparing a cement matrix composite reinforced at least in part with polyethylene pulp which comprises, making an aqueous slurry of Portland cement and a pulp of oriented polyethylene fibrids having a birefringence of at least about 0.030 and prepared from a plexifilamentary structure, depositing the slurry on a porous surface, dewatering the slurry and curing the composite.

6. A cement matrix composite reinforced at least in part with a pulp of oriented polyethylene having a birefringence of at least about 0.030, said pulp constituting from 0.1 to 10% by weight of the composite.

4,608,090

PLASTIC DEFORMABLE COMPOSITION AND PROCESS FOR THE PREPARATION THEREOF

Mária Keresztessy née Badi; Eleonora Paka née Kas, both of Nyirbogdany; Lájos Gyongyossy, Budapest; Béla Farkas, Budapest, and Sándor Paku, Budapest, all of Hungary, assignors to Szegvari Haziipari Szovetkezet, Szegvar, Hungary

Filed Mar. 13, 1985, Ser. No. 712,857

Claims priority, application Hungary, Mar. 13, 1984, 1003/84

Int. Cl.[4] C08L *91/06*

U.S. Cl. 106—272 7 Claims

1. Plastic deformable composition comprising: mineral grist selected from the group consisting of dolomite, baryte, talc and calcium carbonate; and an adhesive, said adhesive comprising a mixture of 20–25% by weight of a first oil raffinate having a solidification point from −15° C. to −18° C., 20–25% by weight of a second oil raffinate having a solidification point from −14° C. to −16° C., 40–52% by weight of microcrystalline paraffin having molecular weight from 400–700, 1–4% of weight of macrocrystalline paraffin having molecular weight from 200–300, 0.1–1.0% by weight of stearine and 0.01–2.0% by weight of coloring agent.

4,608,091

PEROXIDE SELECTIVE STRIPPING COMPOSITIONS AND METHOD

Thomas E. Sullivan, Hamden, and Thomas W. Bleeks, New Haven, both of Conn., assignors to Enthone, Incorporated, West Haven, Conn.

Continuation of Ser. No. 338,805, Jan. 11, 1982, abandoned. This application Apr. 1, 1985, Ser. No. 717,608

Int. Cl.[4] C23G *1/06*

U.S. Cl. 134—3 6 Claims

1. A composition for the selective stripping of hard surface coatings from metal substrates consisting essentially of:

about 75–250 g/l of a peroxide agent;

about 50–200 g/l of HNO_3;

an effective amount of a selenium compound selected from the group consisting of selenium dioxide, selenous or selenic acids, their metal salts, and mixtures thereof, to accelerate said selective stripping of said hard surface coatings from said metal substrates;

and the remainder being water.

6. A method for the selective stripping of hard surface coatings and nickel-base brazes from metal substrates comprising:

(a) contacting the surface deposit with the composition of claims 1 or 2;

(b) immersing the surface deposit in the composition, which is kept at a temperature during operation of about 20°–55° C., until the deposit is substantially removed from the substrate;

(c) removing the substrate from the composition.

4,608,092

PROCESS FOR IMPROVING THE CORROSION RESISTANCE OF FERROUS METAL PARTS

Yves Tremoureux, Saint-Etienne, and Jean-Luc Reynaud, Andrezieux-Boutheon, both of France, assignors to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, Andrezieux-Boutheon, France

Filed Mar. 19, 1985, Ser. No. 713,633

Claims priority, application France, Mar. 20, 1984, 84 04262

Int. Cl.[4] C23C *22/00, 16/34, 16/44, 22/78*

U.S. Cl. 148—6.11 14 Claims

1. A process for improving the corrosion resistance of ferrous metal parts also subject to heat and chemical treatment including nitriding in association or not with carburizing and/or sulfurizing wherein said parts are immersed in a bath of molten salts containing a sufficient quantity of at least one halogenophosphate having one of the following formulas:

$$M_2/m(PO_3X)$$

in which X is fluorine and M is a metal of one of subgroups Ia, IIa and IIb of the periodic table of elements, having the valency m.

4,608,093

FERROMAGNETIC PARTICLES WITH STABLE MAGNETIC CHARACTERISTICS AND METHOD OF PREPARING SAME

Shizuo Umemura, and Tatsuji Kitamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 545,289, Oct. 25, 1983, Pat. No. 4,554,089. This application Aug. 30, 1985, Ser. No. 771,073

Claims priority, application Japan, Oct. 25, 1982, 57-186036

Int. Cl.[4] C23C *8/14*

U.S. Cl. 148—6.35 5 Claims

1. A process for producing cobalt-free ferromagnetic particles which comprises gradually oxidizing ferromagnetic metal particles containing no cobalt in oxygen-containing gas that results in a ferromagnetic metal inner core and an oxidized outer layer containing paramagnetic Fe^{3+}, wherein the particles have a saturation magnetization of 60–100 emu/g and a coerceive force of 500 Oe or more and wherein the outer layer stabilizes the magnetic characteristics of the particles at a temperature not higher than 80° C. in air.

4,608,094

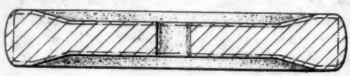
METHOD OF PRODUCING TURBINE DISKS

John A. Miller, Jupiter, and Roy L. Athey, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 18, 1984, Ser. No. 682,968

Int. Cl.[4] C22F *1/10*

U.S. Cl. 148—11.5 N 6 Claims



1. A method of producing a nickel base superalloy article having properties which vary, in a controlled fashion, from one portion of the article to another portion of the article including the steps of:

a. hot working the entire article to a first geometry which approximates the desired final geometry except for portions of the article which are at least about 25% oversized compared to the desired final geometry;

b. heat treating the article to increase the grain size;

c. warm working the oversized portions of the article to final shape

whereby the warm-worked portions of the article have enhanced tensile properties and the hot-worked portions of the article have enhanced creep properties.

4,608,095

GETTERING

Dale E. Hill, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 466,249, Feb. 14, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 719,780

Int. Cl.[4] H01L *21/324*

U.S. Cl. 148—33 17 Claims

1. A semiconductor substrate useful in electronic device manufacturing processes utilizing initial processing temperatures at 1025 C. or below and having capability for gettering defects, contaminants and impurities deleterious to the devices to a region away from the active device region, consisting essentially of a semiconductor material having an oxygen content less than about 34 ppma (ASTM F-121-79) and a 0.05

to 2.0 micron thick layer of polysilicon on the substrate backside from the device region.

4,608,096

GETTERING

Dale E. Hill, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 481,597, Apr. 4, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 736,203

Int. Cl.[4] H01L *21/324*

U.S. Cl. 148—33 **25 Claims**

1. A semiconductor substrate with capability for gettering defects, contaminants and impurities deleterious to electronic devices to a region away from the active device region consisting essentially of a semiconductor material having a 0.05 to 5.0 microns thick layer on the backside of the substrate from the device region of polysilicon containing a dopant element in an amount of 0.1 to 40 weight percent of said layer.

4,608,097

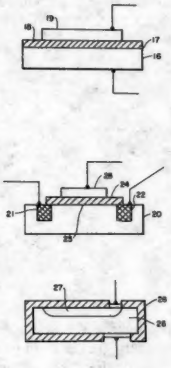
METHOD FOR PRODUCING AN ELECTRONICALLY PASSIVATED SURFACE ON CRYSTALLINE SILICON USING A FLUORINATION TREATMENT AND AN ORGANIC OVERLAYER

Bernard R. Weinberger, Plainsboro; Harry W. Deckman, Clinton, and Eli Yablonovitch, Scotch Plains, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 5, 1984, Ser. No. 658,357

Int. Cl.[4] H01L *21/02, 21/48*

U.S. Cl. 148—33.3 **15 Claims**



1. A method for producing an electronically passivated surface on silicon comprising:

a. surrounding said surface with an inert atmosphere,

b. exposing said surface to a fluorine containing compound,

c. maintaining said surface in an inert atmosphere, and

d. coating said surface with an air impermeable diffusion barrier in order to prevent degradation of said passivated surface.

4,608,098

COATED PRODUCT AND PROCESS

Thomas E. Hale, Warren, Mich., assignor to General Electric Co., Detroit, Mich.

Division of Ser. No. 573,867, Jan. 25, 1984, Pat. No. 4,501,786, which is a continuation of Ser. No. 331,367, Dec. 16, 1981, abandoned. This application Dec. 12, 1984, Ser. No. 680,913

Int. Cl.[4] C23C *8/10*

U.S. Cl. 148—6.3 **16 Claims**

1. The process of pretreating a hard metal or cemented carbide substrate for the reception of wear resistant oxide coatings, said substrate being provided with a surface layer of a carbide, a nitride or a carbonitride of titanium, zirconium, hafnium, vanadium, columbium, tantalum, chromium, molybdenum, or tungsten, said method comprising:

(a) treating the substrate and surface layer in a first atmosphere selected from carbide and oxycarbide forming atmospheres to form a bonding layer of metal selected from at least one of tantalum, niobium or vanadium on said substrate; and

(b) heating the coated substrate of (a) in a second, oxidizing atmosphere until at least portions of the surface are oxidized,

which steps (a) and (b) are carried out in a coating furnace held at a temperature of from about 800° C. to 1300° C.

4,608,099

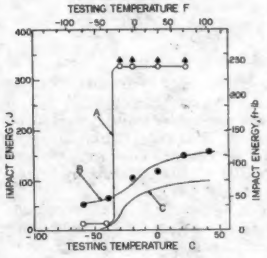
GENERAL PURPOSE MAINTENANCE-FREE CONSTRUCTIONAL STEEL OF SUPERIOR PROCESSABILITY

Ralph M. Davison, Arvada, Colo., and Paul J. Grobner, Ann Arbor, Mich., assignors to Amax Inc., Greenwich, Conn.

Filed Oct. 10, 1984, Ser. No. 659,463

Int. Cl.[4] C22C *38/22, 38/44*

U.S. Cl. 148—37 **6 Claims**



1. A dual phase steel of ferrite and martensite of 0.015–0.031% C, 11–12% Cr, 0.2–0.5% Mo, 1.5%max Ni, 1.5%max Mn, 0.8%max Si, 0.05%max Ti, 0.03%max N, 0.03%max P, 0.03%max S, with the balance Fe; wherein the composition is further limited such that the ferrite factor is maintained between about 8 and 13, the ferrite factor, FF, is defined by the formula:

$$FF = \%Cr + 6x\%Si + 8x\%Ti + 4x\%Mo + 2x\%Al - 2x\%Mn - 4x\%Ni - 40x(\%C + \%N).$$

4,608,100

METHOD OF PRODUCING THIN GAUGE ORIENTED SILICON STEEL

Frank A. Malagari, Jr., Freeport, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 21, 1983, Ser. No. 553,731

Int. Cl.[4] H01F *1/04*

U.S. Cl. 148—111 **6 Claims**

1. A method for producing thin guage cube-on-edge grain-oriented silicon steel from hot-rolled band to fianl guage in two cold reduction steps, the method comprising:

cold working the hot-rolled band to an intermediate guage steel by a reduction of at least 72%;

annealing the intermediate guage to effect primary recrystallized grain structure;

cold working the intermediate annealed gauge steel to a final guage of 0.0065 to 0.0085 inch by a cold reduction of between 55 and 76%;

then applying to the final guage steel a refractory coating; and

final texture annealing for time and temperature sufficient to develop secondary recrystallization.

5. A method for producing thin gauge cube-on-edge grain-oriented silicon steel from hot-rolled band to final gauge in two cold reduction steps, said steel being a mananese-sulfide-inhibited steel containing 2.5 to 4%, by weight, silicon, the method comprising:

cold rolling the hot-rolled band of about 0.06 to 0.10 inch to

HOT ROLL TO 0.080 INCH (NOMINAL)
ANNEAL HOT ROLLED BAND
COLD ROLL TO 0.020 INCH (NOMINAL)
INTERMEDIATE ANNEAL
COLD ROLL TO FINAL GAUGE 0.007 INCH (NOMINAL)
DECARBURIZATION ANNEAL
APPLY REFRACTORY OXIDE COATING
FINAL TEXTURE ANNEAL

an intermediate guage of from 0.019 to 0.022 inch by a reduction of at least 72%;

annealing the intermediate guage steel at temperatures of 1700° to 1750° F. in a nonxidizing atmosphere;

cold rolling the annealed intermediate guage steel to final gauge of 0.0065 to 0.0075 inch by a cold reduction of between 55 and 72%;

annealing the steel to effect decarburization;

then applying to the steel a refractory coating; and

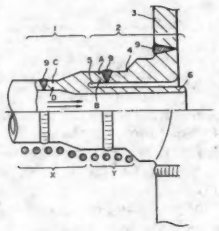
final texture annealing the final gauge steel for time and temperature to develop secondary recrystallization.

4,608,101

METHOD FOR HEAT TREATING PIPE WITH DOUBLE-PIPE SECTION

Tadahiro Umemoto, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1984, Ser. No. 671,976
Claims priority, application Japan, Dec. 27, 1983, 58-249698
Int. Cl.⁴ C21D *9/08*
U.S. Cl. 148—127 **1 Claim**



1. A method for heat treating a pipe in which a double-pipe section is connected with a single-pipe section and a ring-shaped space is defined in said double-pipe section, comprising the steps of: passing cooling water through said pipe while maintaining dead water in said ring-shaped space, first heating said single-pipe section so that a temperature difference between inner and outer wall surfaces of the pipe causes thermal stresses in excess of a yield point in different directions, thereafter heating said double-pipe section for a short time period so that thermal stresses in excess of a yield point are produced adjacent to inner and outer wall surfaces of said double-pipe section, stopping heating of the double-pipe section, and thereafter stopping heating of said single-pipe section with a time lag after stopping of the heating of said double-pipe section.

4,608,102

PRIMER COMPOSITION

Adalbert A. Krampen, Lewiston, Id.; Delbert O. Ells, Clarkston, Wash.; Robert K. Bjerke, and James P. Ward, both of Lewiston, Id., assignors to Omark Industries, Inc., Portland, Oreg.

Filed Nov. 14, 1984, Ser. No. 671,442
Int. Cl.⁴ C06B *25/34*
U.S. Cl. 149—92 **8 Claims**

1. A primer composition comprising:

at least one non-metallic percussion sensitive explosive material selected from the class consisting of diazo, triazole, and tetrazole compounds;

at least one fuel source;

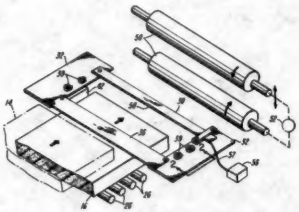
manganese dioxide, and a secondary oxidizer selected from the class consisting of strontium peroxide and zinc peroxide, said secondary oxidizer being present in amount not greater by weight than the manganese dioxide.

4,608,103

PRODUCTION OF FOAM CORE INSULATING PANELS

Donald F. Aldrich, Dayton, Ohio, assignor to Deraspan Corporation, Dayton, Ohio

Filed May 16, 1985, Ser. No. 734,866
Int. Cl.⁴ B29C *27/06*
U.S. Cl. 156—64 **9 Claims**



1. A method of producing a foam core insulating panel having a length substantially greater than its width and a width substantially greater than its thickness, comprising the steps of supporting two flat rigid foam boards in vertically spaced superposed horizontal relation with opposing inner side surfaces defining a space therebetween, positioning an elongated generally flat heating blade horizontally within the space defined between the opposing inner side surfaces of corresponding leading end portions of the foam boards and laterally across the width of the foam boards in spaced relation to each of the side surfaces, positioning a set of power driven horizontal pressure rolls above and below the heating blade and adjacent the vertically spaced end portions of the foam boards with the rolls spaced vertically to define a gap slightly less than the combined thicknesses of the foam boards, feeding the leading end portions of the foam boards horizontally into the gap, pressing the opposing inner side surfaces of the foam boards with the pressure rolls into contact with opposite sides of the heating blade to soften the side surfaces, continuing the feeding of the foam boards between the driven pressure rolls for pressing the heated and softened opposing inner side surfaces together and to obtain heat-fusing of the side surfaces to form one integral foam core panel assembly from the two rigid foam boards, placing the foam core panel assembly between facing

sheets of preselected material, and bonding the facing sheets to the opposite outer side surfaces of the foam core panel assembly.

3. A method as defined in claim 1 and including the steps of attaching a temperature sensing element to the heating blade between the opposing inner side surfaces of the foam boards, sensing the temperature of the heating blade with the sensing element while heating the opposing inner side surfaces of the foam boards, and controlling the temperature of the heating blade in response to the temperature sensed to obtain optimum welding of the opposing inner side surfaces of the foam boards.

4,608,104

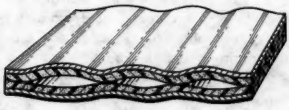
METHOD OF MAKING A THERMOFORMABLE LAMINATE STRUCTURE

James S. Holtrop, South Windsor, Conn., and Richard P. Maurer, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 648,547, Sep. 7, 1984, Pat. No. 4,529,641, which is a continuation-in-part of Ser. No. 553,462, Nov. 17, 1983, Pat. No. 4,489,126. This application Jul. 13, 1985, Ser. No. 755,240

Int. Cl.[4] B32B *31/16, 5/32*

U.S. Cl. 156—78 **3 Claims**



1. A method of forming a laminate structure comprising at least two layers of foamed thermoplastic material having at least one cavity between said layers, said method comprising:

(a) providing at least two layers of foamed thermoplastic material, said layer having inner and outer surfaces and having a polymer-impregnated fabric bonded to at least one surface of each of said layers, wherein adhesive is applied in a registration pattern on the surface of one of said layers adjacent to another of said layers,

(b) providing a blow pin between said layers at a location devoid of adhesive,

(c) laminating said at least two layers of foamed thermoplastic material together,

(d) heating said layers to a thermoforming temperature, and

(e) thermoforming said layers while applying pressurized gas to said blow pin to expand the volume between said layers at locations devoid of adhesive.

2. The method of claim 1 further comprising cooling said laminate structure by introducing carbon dioxide through said blow pins.

3. The method of claim 2 wherein a foam material is injected through said blow pins into the expanded volume between said layers.

4,608,105

PROCESS FOR MANUFACTURING 3-D GLASSES

Stanton W. Alger, Monrovia, Calif., assignor to 3D Video Corporation, North Hollywood, Calif.

Filed Jul. 8, 1983, Ser. No. 512,166

Int. Cl.[4] B32B *31/10, 31/18*

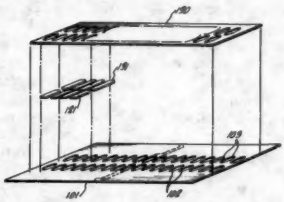
U.S. Cl. 156—108 **13 Claims**

1. An apparatus for manufacturing a plurality of 3-D glasses having a movable work surface, said apparatus comprising:

a turntable having the movable work surface which rotates substantially 90° between a first and a second work station;

a lens placement means for placing a plurality of eye lenses over a first plurality of eye openings formed in a strip of material having an adhesive surface such that each of the plurality of lenses has a border area which contacts the adhesive surface, said lens placement means being located at the first work station located on the turntable;

a frame placement means for placing a sheet of frame material having a second plurality of eye openings on top of the adhesive surface such that the plurality of eye lenses are held between the first plurality of eye openings and the second plurality of eye openings;



a press for laminating the sheet of frame material to the strip of material to form a composite sheet; and

a cutter for cutting a plurality of 3-D glasses from the composite sheet, the frame placement means, the press and said cutter being located at a second work station such that the movable work surface must move between the first and the second work station during manufacture of the plurality of 3-D glasses.

4,608,106

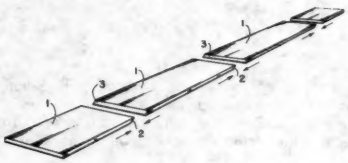
PROCEDURE FOR MANUFACTURING ELONGATED GLUED BEAMS

Pentti K. Lahtinen, 5220 Sunset Trail, Marietta, Ga. 30067

Filed Mar. 25, 1985, Ser. No. 715,273

Int. Cl.[4] B27D *1/10;* **B32B** *31/20*

U.S. Cl. 156—182 **1 Claim**



1. A method for manufacturing elongated glued beams from veneer strips, comprising

feeding a series of veneers to a scarfing line from veneer stacks using vacuum feeders;

scarfing the leading and trailing ends of each veneer in its grain direction with a scarfing saw to provide a consistent scarfing wedge ratio lying within the range of 1:10 to 1:6, and thereby providing a plurality of veneers having ends beveled to the same angle;

spreading glue on the beveled ends of the veneers, drying said glue and pre-heating said glue with infra red heaters;

controlling the movement of said veneers according to veneer quality and thickness, and to extract faulty sheets of veneer;

passing adjacent veneers arranged end to end to a press, positioning beveled overlapping veneer ends over a fixed press support element, and moving an upper movable element downwardly to effect pressing and laminating of said overlapping veneer ends and provide scarf-jointing thereof;

trimming one side of the resultant scarf-jointed veneer using a trimming saw;

cutting the scarf-jointed veneer sheets to desired lengths;

transferring the resultant scarf-jointed veneer sheets to a buffer station;

guiding a plurality of scarf-jointed veneers, in correct order, to a glueing machine;

spreading glue on the upper surface of a plurality of said scarf-jointed veneer sheets, and laying said scarf-jointed glued veneer sheets on a flexible caul in a vertically stacked position, using side shifter forks, to obtain a vertical stack of scarf-jointed glued veneer sheets with the scarf-joints thereof being vertically staggered from one another;

pre-pressing said vertical stack of scarf-jointed glued veneer sheets;

passing the pre-pressed stack to the end feeder of a press on a flexible caul;

pressing the pre-pressed stack to effect lamination and thereby form laminated veneer lumber planks; and

opening the press, extending pulling bars into the press and pulling the laminated veneer lumber planks out on the flexible caul.

4,608,107

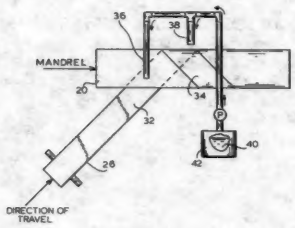
HIGH TEMPERATURE PROBE LANCE COVER

Rocco Falcomato, Brooklyn, N.Y., assignor to Niemand Bros. Inc., Elmhurst, N.Y.

Continuation of Ser. No. 491,409, May 4, 1983, abandoned. This application Nov. 6, 1984, Ser. No. 669,050

Int. Cl.[4] C21C *7/00*

U.S. Cl. 156—190 **1 Claim**



1. A method of continously fabricating high-temperture resistant tubes, which comprises;

forming on a mandrel a spirally wound tube of a protecting base of a high-temperature resistant, flame resistant material;

providing a web of ceramic paper having inner and outer surfaces, said paper being a fibrous material composed of a plurality of discrete ceramic fibers dispersed in the web configuration with a plurality of voids between the fibers;

coating said inner surface of the web with a liquid refractory cement forming composition consisting essentially of an aqueous colloidal suspension of silica; said silica having an average particle size of from 10-30 mv an comprising from 15 to 30 percent by weight of the aqueous suspension;

winding said web with the coated inner surface spirally over said wound tube while the wound tube is on the mandrel, in the same direction as the winding of the protective base with the coated inner surface disposed on the protective base;

coating the outer surface of the wound web of ceramic paper with said liquid refractory cement forming composition while it is winding on the protective base and the ceramic paper is supported on the mandrel;

whereby the coating of the inner surface and the coating of the outer surface penetrate and fill the voids between the fibers of the paper and anchor together the coatings of the inner and the outer surfaces;

covering the coated ceramic paper spirally wound on the mandrel over the spirally wound protective base with a protective covering of a high-temperature resistant, flame-resistant material by spirally winding the protective covering over the coated web of ceramic paper;

whereby there is obtained a tube structure;

drying the structure, whereby the refractory cement forming composition is converted to a rigid, reinforced, refractory cement, and

cutting the continuous fabrication into pre-determined lengths of high-temperature resistant tubes.

4,608,108

WET-END MOLDING METHOD AND MOLDED PRODUCT

John D. Goll, Largo, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 440,042, Nov. 8, 1982, abandoned. This application Jul. 12, 1985, Ser. No. 754,316

Int. Cl.[4] D04H *3/08;* **B31F** *1/00;* **D21F** *13/00;* **B29C** *59/00*

U.S. Cl. 156—219 **14 Claims**

1. A method for producing a fibrous board having a decorative, textured surface comprising the steps of:

(a) forming an aqueous slurry of entangled mineral fibers;

(b) dewatering said slurry to form a wet mat;

(c) pressing said wet mat to consolidate said mat, said consolidated wet mat having from about 50 to 75% water;

(d) pressure molding said consolidated wet mat at a pressure of about 2 to 50 psi while it is still wet by a moulding means provided with a patterned surface layer to create a decorative textured surface on said consolidated wet mat; and

(e) drying said board.

4,608,109

METHOD OF MANUFACTURING HIGH POTENTIAL ELECTRETS

H. Wilson Pook, 120 Widmore Road, Bromley, Kent, England

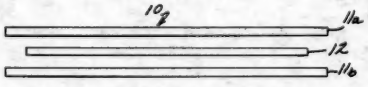
Continuation-in-part of Ser. No. 379,648, May 19, 1982, Pat. No. 4,440,591. This application Feb. 27, 1984, Ser. No. 583,600

Claims priority, application United Kingdom, Mar. 7, 1983, 8306215

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.[4] B32B *31/00, 31/20*

U.S. Cl. 156—247 **5 Claims**



1. A process for forming electrets comprising the steps of:

forming a stack of sheets of a first dielectric material interleaved between sheets of a second dielectric material;

pressing said stack between the faces of a press;

heating during said pressing said faces of said press and said sheets of said second dielectric material to the glass transition thereof whereby said heating and pressing causes plastic flow of said sheets of said second dielectric material relative to said sheets of said first dielectric material to produce electrical charges thereon;

cooling said sheets of material subsequent to the heating thereof; and

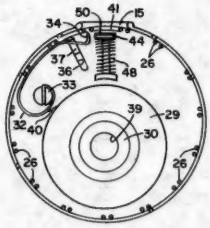
stripping off said sheets of said second dielectric material from said sheets of said first dielectric material.

4,608,110

PRESSURE SENSITIVE LABEL DISPENSER

Ward C. Smith, 16 Judith Ann Ct., Rahwah, N.J. 07430

Filed Feb. 19, 1985, Ser. No. 702,809
Int. Cl.[4] B32B *31/04*
U.S. Cl. 156—250 32 Claims



1. An applicator for dispensing adhesive tape onto a receiving surface, said applicator being of the type including

means supporting a tape supply reel, and

take-off reel means on which tape from said supply reel is temporarily adhered prior to being dispensed,

said applicator being characterized in that said means supporting said tape supply reel is located within said take-off reel.

4,608,111

BONDING METHOD EMPLOYING AN ADHESIVE WHICH CONTAINS IN AN AQUEOUS BASE AN EFFECTIVE AMOUNT OF A POLYVINYL ALCOHOL AND A LIGNIN SULFONATE

Robert M. Hume, III, Cottage Grove; Robert A. LaBrash, Roseville, and Michael J. Vander Giessen, Blaine, all of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Division of Ser. No. 600,400, Apr. 16, 1984, Pat. No. 4,564,649.
This application Sep. 9, 1985, Ser. No. 773,456
Int. Cl.[4] C09J *3/28*
U.S. Cl. 156—306.6 4 Claims

1. A method of laminating a first sheet to a second sheet which comprises:

A. forming a non-bonded laminate by placing between said first sheet and said second sheet a thin film comprising (a) an ammonium or alkali metal lignin sulfonate composition; (b) a polyvinyl alcohol composition; and (c) cellulosic fiber; wherein there are about 1 to 8 parts by weight of the lignin sulfonate composition per each part by weight of the polyvinyl alcohol composition and the cellulosic fiber is present at a concentration of about 0.1 to 10 wt-% of the film; and

B. applying heat to the non-bonded laminate.

4,608,112

MASK ALIGNER FOR SOLAR CELL FABRICATION

Diane K. Hufford, Vance AFB, Okla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

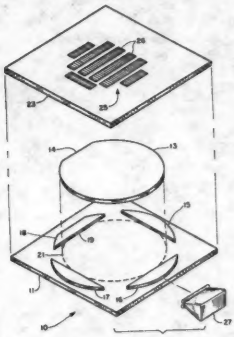
Division of Ser. No. 610,911, May 16, 1984, Pat. No. 4,547,958.
This application Jul. 19, 1985, Ser. No. 756,548
Int. Cl.[4] C23F *1/02*; H01L *21/306*; B44C *1/22*; C03C *15/00*
U.S. Cl. 156—345 3 Claims

1. A device for accurately aligning a substrate having a substantially straight edge cleaved thereon along a predetermined crystallographic orientation of the material of said substrate in a fabrication process for a vertical junction solar cell using said substrate, said device comprising:

a. a base plate;

b. a recess in said base plate defining an opening for snugly receiving said substrate, said recess including a substantially straight portion for abutment with said cleaved straight edge of said substrate; and

c. a mask plate for covering said base plate and substrate,



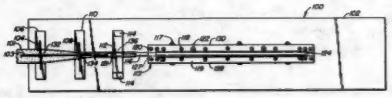
said mask plate including a pattern thereon in predetermined configuration and orientation through which said substrate may be exposed in said fabrication process for said solar cell.

4,608,113

WATERPROOF QUICK MATCH AND APPARATUS AND METHOD OF FORMING SAME

Thomas E. Miller, 600 Center Ave., Grand Junction, Colo. 81501

Filed Sep. 14, 1981, Ser. No. 302,169
Int. Cl.[4] B65H *11/08*
U.S. Cl. 156—438 9 Claims



1. A superior quick match forming apparatus comprising:

a bed plate;

a first guide means with means connected to the bed plate and having means to support a continuous flexible elongated member;

a second guide means spaced away from the first guide with means connected to the bed plate having means to support a continuous flexible elongated member and means to support and curl a first and second longitudinal edge of a substantially flat continuous strip member toward each other;

an elongated member passage tube;

an elongated member passage tube hanging means further spaced away from the first guide means having means to suspend an end of the elongated member passage tube;

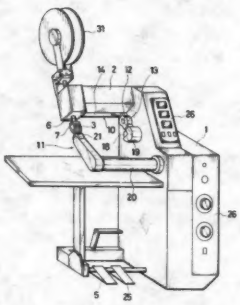
a strip member heat sealing means and elongated member passage tube means further comprising a pair of elongated block with means connected having a longitudinal recess bore concentric to the elongated member passage tube extending therethrough, surface covering members spaced apart and disposed on an upper surface of each of the respective blocks with means connected to the respective blocks, a vertically movable heat sealing means disposed between the surface covering members and extending into the recess bore of the blocks and removably contacting the elongated member passage tube and a heating unit with means connected to the heat sealing means.

4,608,114

SEAL TAPE STICKING DEVICE

Kouzo Nakao, Wakayama, Japan, assignor to Queen Light of Electronic Industries Ltd., Wakayama, Japan

Filed Feb. 1, 1985, Ser. No. 697,393
Claims priority, application Japan, May 15, 1984, 59-071687
Int. Cl.[4] B30B *3/04, 15/34*
U.S. Cl. 156—497 10 Claims



1. A device for applying seal tape to sheet-like material, wherein an adhesive tape is fed together with a portion of the material in a feed direction and pressed between a pair of opposed rollers, the device comprising:

a machine body;

a fixed arm projecting substantially horizontally from the machine body;

a common roller freely rotatably mounted at the distal end of the fixed arm, an operating position for other rollers being defined by operative engagement with the common roller, the material and the tape being pressed between rollers in the operating position;

a first movable arm extending generally across the feed direction and having a first positionable roller disposed at the distal end thereof, the first movable arm being pivotally mounted on the machine body for movement of the first roller between the operating position and a first stand-by position;

a second movable arm arranged generally along the feed direction and having a second positionable roller disposed at the distal end thereof, the second movable arm being pivotally mounted on the machine body for movement of the second roller between the operating position and a second stand-by position;

means for alternately moving the first and second arms to alternately move the first and second rollers into and out of the operating position and their respective stand-by positions, the first and second arms remaining substantially fixed in orientation relative to the feed direction throughout their alternating pivotal movement; and,

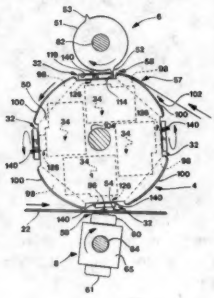
means for rotatably driving each of the first and second rollers when disposed in the operating position, whereby the seal tape can be applied to annular portions of the material when the first movable roller is in the operating position and can be applied to lengthwise portions of the material when the second movable roller is in the operating position.

4,608,115

REVOLVING TRANSFER ROLL

Carl G. Schroth, Kimberly, and Russell E. Thorson, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 23, 1984, Ser. No. 603,017
Int. Cl.[4] B32B *31/00*
U.S. Cl. 156—519 15 Claims



1. An apparatus for applying to a sheet of a first material, continuously moving in a first direction, at least one discrete length of a second material, comprising:

a revolvable roll;

feeding means for feeding at least one continuous ribbon of said second material into circumferential engagement with said revolvable roll;

cutting means, with at least one cutting blade, for cutting said continuous ribbon into said at least one discrete length while said ribbon is in engagement with said revolvable roll;

at least one rotatable platen means, disposed on and perpendicularly movable with respect to the plane of rotation, and revolvable with, said revolvable roll, for rotating said at least one discrete length from a first position to a second position;

first drive means, disposed within, and revolvable with, said revolvable roll;

a cutting surface, strikable by said cutting means with a force sufficient to cut said ribbon, disposed on, and rotatable with, said rotatable platen means;

means for transferring drive from said first drive means to said rotatable platen means in a plane parallel to the plane of said cutting surface; and

application means for transferring said at least one discrete length from said revolving roll to said sheet whereby said cutting force is not transmitted to said first drive means.

4,608,116

BASEBOARD EDGE TAPING TOOL

Keith Braselton, 2176 Allston Pl., Fairfield, Calif. 94533

Filed Jun. 20, 1985, Ser. No. 747,158
Int. Cl.[4] B32B *35/00*
U.S. Cl. 156—523 10 Claims

10. A masking tape applicator for applying a roll of masking tape to a subject surface, comprising:

a base having a flat bottom surface for resting on said subject surface;

a body rotatably mounted to said base, said body being rotatable between a first position and a second position;

a spool rotatably mounted to said body proximate a rear end of said body forming a holder for the roll of masking tape;

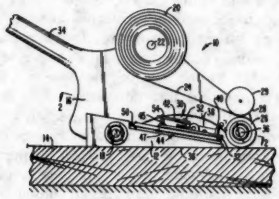
a handle extending from said rear end of said body;

a first roller rotatably mounted to said body proximate a front end of said body opposite said rear end, said first roller having an edge in approximately the same plane as

said bottom of said base when said body is in said first position, said first roller being movable upwardly and rearwardly as said body rotates from said first position to said second position;

a second roller rotatably mounted to said body adjacent said first roller for holding the masking tape against said first roller when said masking tape is extended from said spool across said first roller;

a blade housing movably mounted to said base and coupled



to said body, such that said blade housing extends horizontally forward away from said rear end of said body when said body is rotated from said first position to said second position, whereby said blade housing when extended contacts said portion of the masking tape extending from said first roller to said bottom surface of said base; and

a cutting blade enclosed in said housing and extendible from said housing to cut said portion of the masking tape after said blade housing contacts said portion of the masking tape.

4,608,117

MASKLESS GROWTH OF PATTERNED FILMS

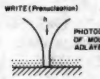
Daniel J. Ehrlich, Lexington; Thomas F. Deutsch, Cambridge, both of Mass.; Richard M. Osgood, Chappaqua, N.Y., and Howard Schlossberg, Annandale, Va., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

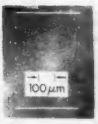
PCT No. PCT/US82/00745, § 371 Date Jul. 19, 1982, § 102(e) Date Jul. 19, 1982, PCT Pub. No. WO83/04269, PCT Pub. Date Dec. 8, 1983

PCT Filed Jun. 1, 1982, Ser. No. 403,752

Int. Cl.⁴ C30B *25/02*

U.S. Cl. 156—610 **23 Claims**





1. An apparatus for depositing a patterned film onto a substrate, the apparatus comprising:

a. a deposition chamber capable of receiving a substrate;

b. a beam source of energy;

c. substrate-supporting means for supporting the substrate in the chamber;

d. substrate-positioning means for positioning the substrate relative to the beam source;

e. coating means for introducing a dissociable fluid medium into said chamber and depositing therefrom an absorption layer of the dissociable fluid medium onto said substrate;

f. evacuating means for removing any excess amounts of said dissociable fluid medium from said chamber to render the chamber substantially free of said dissociable fluid medium after said absorption layer has been formed on said substrate;

g. focusing means for focusing the beam energy onto said substrate to dissociate portions of said absorption layer and thereby define prenucleation regions for film deposition; and

h. atom deposition means for introducing atoms into said chamber for selective deposition onto said prenucleated regions.

4,608,118

REACTIVE SPUTTER ETCHING OF METAL SILICATE STRUCTURES

Bernard J. Curtis, Gattikon, and Hans R. Brunner, Steinmaur, both of Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 15, 1985, Ser. No. 702,338

Int. Cl.⁴ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **12 Claims**

1. A process of forming a patterned layer of a metal silicide on a substrate comprising:

(a) depositing the metal silicide on the substrate;

(b) providing a patterned layer of a resist material overlying the metal silicide layer; and

(c) anisotropically reactive sputter etching the exposed portion of the metal silicide layer with an etchant consisting essentially of silicon tetrachloride.

4,608,119

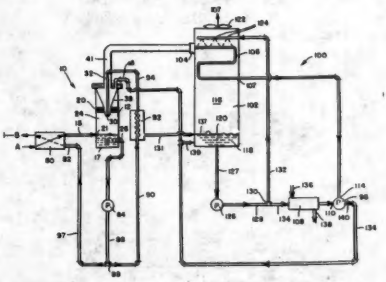
APPARATUS FOR CONCENTRATING AQUEOUS SOLUTIONS

Jack T. Rowland, Grand Island, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Division of Ser. No. 345,668, Feb. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 180,320, Aug. 22, 1980, abandoned. This application May 14, 1984, Ser. No. 609,596

Int. Cl.⁴ B01D *1/20, 3/10*

U.S. Cl. 159—3 **13 Claims**



7. An apparatus for concentrating an aqueous solution of a hygroscopic organic liquid having a boiling point higher than the boiling point of water without substantial loss of the organic liquid, comprising:

an airtight evacuated chamber;

means, external to said chamber, for preheating the solution to a temperature below its boiling point at a pre-determined positive pressure;

a pad of woven mesh positioned to define top and bottom cells within said chamber;

a spray nozzle positioned within said chamber for injecting said preheated solution downwardly into said bottom cell as an aerosol; means for maintaining said evacuated chamber at a pressure which would vaporize water from said aerosol to form a concentrated aerosol;

means for drawing said vaporized water through said pad to said top cell while the concentrated aerosol is coalesced into droplets in said pad, said droplets falling to the bottom of said bottom cell;

a continuously wetted reflux means positioned within said top cell for contacting said vaporized water to remove residual organic liquid therefrom; and

means for withdrawing the vaporized water from the top cell after contact with said reflux means.

11. An apparatus for concentrating an aqueous solution of a hygroscopic organic liquid having a boiling point higher than the boiling point of water without substantial loss of the organic liquid, comprising:

an evacuated chamber;

means, external to said chamber, for preheating the solution to a temperature below its boiling point at a pre-determined positive pressure;

means for injecting said preheated solution into the chamber as an aerosol whereby water is vaporized from said aerosol and a concentrated aerosol of the organic liquid is produced;

means for coalescing said concentrated aerosol into a concentrated organic solution;

means for carrying the vaporized water as dilute vapor from said chamber to a secondary recovery means for condensing said dilute vapor to a dilute aqueous organic solution and extracting water therefrom to form a secondary concentrated aqueous solution,

said secondary recovery means including an evaporative condenser comprising a conduit for containing said dilute vapor, means for moving a stream of air past the conduit to cool and condense said dilute vapor to said dilute aqueous organic solution and means for discharging said dilute aqueous organic solution.

4,608,120

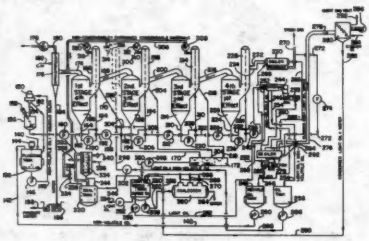
APPARATUS FOR REMOVING LIGHT OIL FROM SOLIDS

Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, East Hanover, N.J.

Division of Ser. No. 419,574, Sep. 17, 1982. This application Mar. 7, 1984, Ser. No. 587,133

Int. Cl.[4] B01D *1/14, 1/26*

U.S. Cl. 159—17.1 **8 Claims**



1. An apparatus for recovering clean water and substantially dry, fluidizing oil-free solids from aqueous solids dehydrated in a light fluidizing oil medium, comprising: a tank to receive a stream of said aqueous solids having a mixing mechanism, a light fluidizing oil reservoir, means for transmitting light fluidizing oil from said light oil reservoir to said tank, an evaporator, a conduit extending from said tank to said evaporator, a first condenser, a conduit extending from said evaporator to said first condenser, an oil-water separating means, a conduit extending from said first condenser to said oil-water separating means, means for separately withdrawing light oil and clean water from said oil-water separating means, a conduit extending from said withdrawing means to said light fluidizing oil reservoir, a liquid-solid separating means, a conduit extending from said evaporator to said liquid-solid separating means, a deoiler means, a conduit extending from said liquid-solid separating means to said deoiler means, a conduit extending from said liquid-solid separating means to said light fluidizing oil reservoir, a boiler-furnace having a boiler region and a heating region, a conduit extending from the boiler region of said boiler-furnace to said evaporator, a conduit extending from the heating region of said boiler-furnace to said deoiler means, a second condenser, a conduit extending from said deoiler means to said second condenser, and means connecting said second condenser with said light fluidizing oil reservoir.

3. An apparatus for recovering clean water and substantially dry, fluidizing oil-free solids from solids dehydrated in a light fluidizing oil medium comprising: a tank to receive a stream of said aqueous solids having a mixing mechanism, a light fluidizing oil reservoir, means for transmitting light fluidizing oil from said light oil reservoir to said tank, an evaporator, a conduit extending from said tank to said evaporator, a first condenser, a conduit extending from said evaporator to said first condenser, an oil-water separating means, a conduit extending from said first condenser to said oil-water separating means, means for separately withdrawing light oil and clean water from said oil-water separating means, a conduit extending from said withdrawing means to said light fluidizing oil reservoir, a liquid-solid separating means, a conduit extending from said evaporator to said liquid-solid separating means, a deoiler means, a conduit extending from said liquid-solid separating means to said deoiler means, a conduit extending from said liquid-solid separating means to said light fluidizing oil reservoir, a boiler-furnace having a boiler region and a heating region, a conduit extending from the boiler region of said boiler-furnace to said evaporator, a heat transfer device disposed within the heating region of said boiler-furnace, said heat transfer device having a first end and a second end, a conduit extending from the first end of said heat transfer device to said deoiler means, a second condenser, a conduit extending from said deoiler means to said second condenser, means connecting said second condenser with said light fluidizing oil reservoir, and a conduit extending from said second condenser to the second end of said heat transfer device.

4,608,121

PROCESS FOR CONTINUOUS DIGESTION OF FINELY-DIVIDED MATERIAL WITH HEAT CAPACITY FLOWS OF SUBSTANTIALLY THE SAME MAGNITUDE

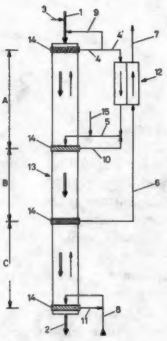
Per H. Östman, Jorvas, Finland, assignor to Ekono Oy, Helsinki, Finland

Filed Dec. 20, 1982, Ser. No. 450,905

Claims priority, application Finland, Dec. 31, 1981, 814229

Int. Cl.[4] D21C *7/10, 7/14*

U.S. Cl. 162—19 **4 Claims**



1. A process for continuous digestion at elevated tempera-

ture of finely-divided material by means of passing said finely-divided material through a heating zone, one or more digesting zones and a cooling zone in contact with a liquid phase, comprising feeding the finely-divided material into and withdrawing liquid phase from the inlet end of the heating zone in such relative quantities that their heat-capacity flows are of substantially the same magnitude,

mixing fresh digesting liquor and the finely-divided material before being fed into the inlet end of the heating zone and bringing at least a part of the liquid phase withdrawn from the inlet end of the heating zone into indirect counter-current heat-exchange contact with spent hot liquid phase withdrawn from the outlet end of the digesting zone in such relative quantities that the heat-capacity flows of the liquid phases are of substantially the same magnitude and returning said part of the withdrawn liquid phase to the outlet part of said heating zone,

and feeding cold displacement liquid into the outlet end of the cooling zone in such a net quantity that its heat-capacity flow is substantially of the same magnitude as the heat-capacity flow of the digested material and the liquid content thereof withdrawn from the outlet end of the cooling zone.

4,608,122

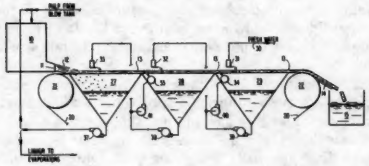
METHOD FOR WASHING A PAPER FIBER ON A BELT WASHER USING A SONIC FREQUENCY DISTURBANCE

Edward P. Klein, Covington, Va., and Alfred H. Nissan, Scarsdale, N.Y., assignors to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 474,691, Mar. 11, 1983, abandoned. This application Oct. 19, 1984, Ser. No. 662,802

Int. Cl.[4] B01D *35/20;* **D21C** *9/02;* **D21F** *1/20*

U.S. Cl. 162—60 **4 Claims**



1. A method of operating a continuous belt washer for paper fiber suspended in a liquid liquor comprising the steps of:

A. depositing said fiber as a liquor suspended slurry onto the top side of an endless belt screen traveling along a direction and course which passes over a plurality of liquor receiving vessels distributed along the length of a fiber carrying portion of said belt, each vessel being defined by a pair of transversely extending compartment boundaries;

B. impressing a pressure differential across the fiber carrying portion of said belt screen between said compartment boundaries relative to an atmosphere above said belt supported slurry and said suspension liquor receiving vessels whereby a substantial portion of said liquor is induced to drain through said belt into said receiving vessels leaving said fiber supported on said belt as a loose, web mat having a first porous matrix of interstitial flow channels formed therein;

C. softly depositing onto the topside of said mat so as to avoid distrubance of said first matrix, at a first point located between compartment boundaries of a first vessel, a first displacement flow of wash liquor having a solids constituency of lower concentration than that of residual suspension liquor remaining in the flow channels of said first mat pore matrix;

D. rearranging said first pore matrix to form a second pore matrix within said mat along the bottom side thereof adjacent said belt with a line of sonic frequency disturbance extending substantially transversely of the belt traveling direction at a second point along said belt course located between compartment boundaries of a second vessel for opening preivously closed pore and flow channels whereby suspension liquor confined in small and obstructed flow channels in said first matrix is induced to drain more completely and uniformly; and,

E. at a third point located between the compartment boundaries of said second vessel but further along said belt course than said second point, softly depositing onto the topside of said mat so as to avoid disturbance of said second matrix, a second displacement flow of wash liquor having a solids constituency of lower concentration than that of residual suspension liquor remaining in the flow channels of said second pore matrix.

4,608,123

METHOD OF MINIMIZING UNTOWARD EFFECT OF CONTAMINANTS, SUCH AS PITCH, IN THE PAPERMAKING OPERATION

Robert J. Leahy, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 20, 1985, Ser. No. 703,578

Int. Cl.[4] D21H *5/12*

U.S. Cl. 162—146 **3 Claims**

1. In the method of manufacturing paper from an aqueous dispersion of cellulosic pulp containing pitch and wherein there is incorporated in the cellulosic pulp, prior to sheet formation, a material to reduce the untoward effects of the pitch on the papermaking operation, the improvement which comprises adding to the cellulosic pulp, prior to sheet formation, a water-dispersible polyolefin pulp, the amount of polyolefin pulp employed being by weight (dry basis) from about 0.05% to about 0.25% based on the dry weight of the cellulosic pulp.

4,608,124

METHOD FOR CUTTING A LEAD-IN STRIP FROM A PAPER WEB IN A PAPER MACHINE

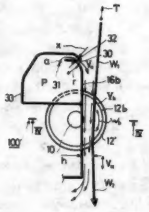
Pekka Mauranen, and Timo Vedenpää, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

Division of Ser. No. 488,664, Apr. 26, 1983, Pat. No. 4,566,944. This application Sep. 13, 1985, Ser. No. 776,126

Claims priority, application Finland, Apr. 27, 1982, 821446

Int. Cl.[4] D21F *1/36*

U.S. Cl. 162—193 **10 Claims**



1. A method for forming a lead-in strip from a paper web in a multiple cylinder dryer section of a paper machine and for increasing the width of the lead-in strip by an oblique draw, and wherein a cutter for cutting the web are situated alongside a region of an unsupported draw of the web in the dryer section, the method comprising the steps of:

providing a guide surface in association with the web cutter, the guide surface being substantially parallel to the run of the web over at least the region of the unsupported web draw which passes alongside the web cutter;

directing a gas flow substantially parallel to the guide surface into a space between said guide and said web to

stabilize the run of the web over at least the region of the unsupported web draw which passes alongside the web cutter to stabilize the web run as it passes alongside the web cutter; and

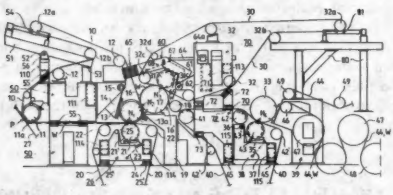
cutting the stabilized web as it passes the web cutter.

4,608,125

FRAME CONSTRUCTION IN A PAPER MACHINE PRESS SECTION FOR FACILITATING REPLACEMENT OF PRESS ROLLS AND FABRICS

Markku Autio, Jyväskylä, Finland, assignor to Valmet OY, Finland

Filed Apr. 25, 1985, Ser. No. 727,104
Claims priority, application Finland, Nov. 29, 1984, 844693
Int. Cl.⁴ D21F *3/04*; D21G *9/00*
U.S. Cl. 162—273 **15 Claims**



1. In a paper machine press section having a compact press roll combination including a first upper press roll, a second lower press roll forming a first press nip with said upper press roll, and a third central press roll forming a second press nip with said upper press roll, said press section further having a first press fabric passing through said first and second press nips and a second press fabric passing through said first press nip, a web adapted to run between said press nips in a longitudinal machine direction, a frame construction on which said press rolls and fabrics are mounted, comprising:

a front frame situated before said roll combination in the direction of web run through the press section;

a rear frame separate from said front frame situated after said roll combination in the direction of web run through the press section;

a first intermediate frame situated above said roll combination and having a pair of longitudinal ends, said first intermediate frame being pivotally mounted on said rear frame at one of its longitudinal ends at a longitudinal side of said roll combination by a first pivot shaft having an axis transverse to the longitudinal machine direction;

first joint means for releasably attaching the other one of said longitudinal ends of said first intermediate frame to said front frame;

actuating means for pivoting said first intermediate frame around said pivot shaft between a closed position wherein said first intermediate frame substantially overlies said roll combination and an open position to create an open space above said roll combination,

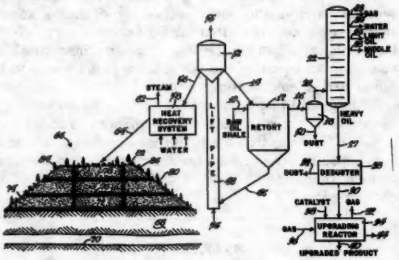
whereby at least one of press rolls and press fabrics can be removed and replaced through said open space when said first intermediate frame is in its open position.

4,608,126

RETORTING SYSTEM AND DISPOSAL SITE

George H. Watson, Naperville, Ill.; David B. McWhorter, Fort Collins, and Adrian Brown, Littleton, both of Colo., assignors to Amoco Corporation, Chicago, Ill. and Chevron U.S.A., Inc.

Filed Mar. 26, 1984, Ser. No. 593,713
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.
Int. Cl.⁴ C10B *1/04*
U.S. Cl. 202—84 **12 Claims**



1. A disposal site built upon ground at a location in proximity to an oil shale retorting plant, comprising:

vegetation extending generally upwardly;

top soil supporting said vegetation;

a pile of tailings having a top beneath said top soil, said tailings selected from the group consisting of retorted, combusted, moisturized, and agglomerated oil shale, catalyst, and combinations thereof;

air flow means extending generally through said pile for vaporizing and discharging moisture in said pile into the atmosphere to substantially prevent leaching of said tailings into the ground and nearby natural bodies of water; and

said air flow means including a permeable base comprising a porous rocky overburden disposed upon and in fluid communication with the ground for supporting said pile of oil shale tailings and a substantially upright stack of rocks extending upwardly from said permeable base of rocky overburden through said top of said pile of oil shale tailings and said stack not being covered by said top soil or vegetation.

4,608,127

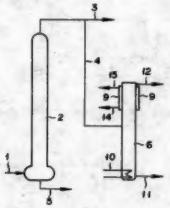
DIBENZOFURAN DISTILLATION AND CRYSTALLIZATION PROCESS

Kiyoshi Sakuma, Tadao Tomioka, Sunao Tabuchi, Kihachiro Ohta, and Masakazu Takeuchi, all of Kitakyushu, Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 406,224, Aug. 9, 1982, abandoned. This application May 28, 1985, Ser. No. 741,268
Claims priority, application PCT Int'l Appl., Dec. 10, 1980, PCT/JP80/00303
Int. Cl.⁴ C07D *307/91*; B01D *3/00, 9/00*
U.S. Cl. 203—48 **12 Claims**

1. A process for producing dibenzofuran of at least 95% purity, characterized by the steps of distilling a dibenzofuran-containing coal tar fraction predominantly composed of components boiling at temperatures in the range of 220° to 300° and thereby producing a dibenzofuran fraction having a dibenzofuran content of 40% to 90% by weight, a dibenzofuran-/acenaphthene molar ratio of not less than 1.3, and a fluorene/-dibenzofuran molar ratio of not more than 0.05, and subsequently subjecting said dibenzofuran fraction to continuous crystallization purification thereby separating and recovering dibenzofuran, wherein the continuous crystallization is effected by continuously feeding said dibenzofuran fraction into

a continuous crystallization column provided with a cooling zone at the top thereof for crystallizing dibenzofuran from the dibenzofuran fraction fed thereto, a heating zone at the bottom thereof for melting of the formed crystals as they sink to the bottom, and a refining zone in between said cooling and heating zones for enabling the formed crystals as they sink from said cooling zone to said heating zone to come into counter



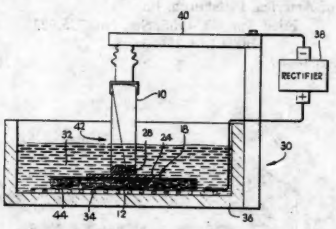
current contact with and to pass through and be washed by a mass of molten crystals along the path between said cooling and heating zones, wherein the temperature of the cooling zone is kept in the range of 20° to 70° C., and the temperature of the heating zone is kept in the range of 75° to 83° C., and wherein said dibenzofuran fraction is fed into said column between said cooling and heating zones, mother liquor is continuously withdrawn from said cooling zone, and molten crystals are continuously withdrawn from said heating zone at rates which maintain a mass of molten crystals in said column to wash the formed crystals as they sink to the bottom of said column.

4,608,128

METHOD FOR APPLYING ABRASIVE PARTICLES TO A SURFACE

Edward R. Farmer, Reading, and Allyn N. Stillman, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 23, 1984, Ser. No. 633,741
Int. Cl.⁴ C25D *15/00*
U.S. Cl. 204—16 **2 Claims**



1. A method for applying preselected particles to a turbine engine blade tip comprising the steps of:

providing a tape and particle member;

(a) the tape of the member being electrically non-conductive and having pores large enough to allow passage therethrough of electrodeposition current and electrolyte solution but smaller than the size of abrasive particles on the tape;

(b) the tape having a porous adhesive layer of relatively low tack level on a tape surface; and

(c) the abrasive particles being carried by the adhesive through a first bond;

cleaning the blade tip;

immersing blade tip and the tape and particle member in an electrolyte solution in spaced apart relationship in an electrodeposition system;

moving the blade tip into contact with the particles carried by the tape while immersed in the electrolyte solution;

electrodepositioning a metallic coating through pores of the tape and adhesive onto the blade tip and about the abrasive particles to provide a second bond, between the metallic coating and the abrasive particles, stronger than the first bond; and

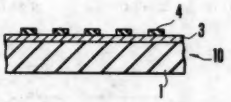
withdrawing to separate the blade tip from the tape and particle member at the first bond while immersed in the electrolyte solution.

4,608,129

POLYMER FILM WITH CONDUCTIVE PATTERN AND METHOD OF MANUFACTURING THE SAME

Toshiaki Tamamura, Katsuta; Osamu Niwa, Mito; Makoto Hikita, Mito, and Akio Sugita, Mito, all of Japan, assignors to Nippon Telegraphy and Telephone, Tokyo, Japan

Filed May 21, 1985, Ser. No. 736,491
Claims priority, application Japan, May 22, 1984, 59-101676; Jun. 4, 1984, 59-113095; Jul. 27, 1984, 59-155605; Dec. 7, 1985, 59-257395
Int. Cl.⁴ B44C *1/04*
U.S. Cl. 204—18.1 **12 Claims**



1. A method of manufacturing a polymer film with a conductive pattern, comprising the steps of:

forming an insulating polymer film over a patterned electrode surface;

contacting said insulating polymer film with an electrolytic solution containing an aromatic compound to permit said aromatic compound to diffuse through said insulating polymer film to the interface between said insulating polymer film and said patterned electrode surface; and

applying an electric current across said insulating polymer film to polymerize said aromatic compound at said interface and thereby form an electrically conductive pattern of polymerized aromatic compound extending from said interface into the bulk of said insulating polymer film.

4,608,130

METHOD OF PRODUCING METALLIC CHROMIUM, TIN OR TIN-NICKEL, AND HYDRATED CHROMIUM OXIDE ELECTROPLATED STEEL

Nobuyoshi Shimizu; Terunori Fujimoto; Tsuneo Inui, and Masatoki Ishida, all of Yamaguchi, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed May 8, 1984, Ser. No. 608,088
Int. Cl.⁴ C25D *5/12, 11/38*
U.S. Cl. 204—27 **9 Claims**

1. A process for continuously preparing a surface treated steel sheet consisting of a steel base having thereon three layers consisting of a bottom layer of metallic chromium, a middle layer of metallic tin or tin-nickel alloy and a top layer of hydrated chromium oxide, which process comprises:

(a) electrolytically chromium plating a steel base to form a layer of metallic chromium and hydrated chromium oxide thereon;

(b) electrolytically tin or tin-nickel alloy plating the chromium plated steel base with a tin or a tin-nickel plating solution under conditions sufficiently acidic to substantially dissolve said hydrated chromium oxide in said solution; and

(c) electrolytically forming a layer of hydrated chromium oxide on the tin or tin-nickel plated, chromium plated steel base of step (b).

4,608,131

PROCESS FOR THE ANODIC OXIDATION OF ALUMINUM AND USE THEREOF AS SUPPORT MATERIAL FOR OFFSET PRINTING PLATES

Michael Brenk, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt Am Main, Fed. Rep. of Germany

Filed Apr. 10, 1985, Ser. No. 721,753

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413899

Int. Cl.[4] C25D *5/44*

U.S. Cl. 204—33 15 Claims

1. A process for anodic oxidation of material selected from aluminum and aluminum alloys, comprising the steps of:

roughening the surface of the material by mechanical, chemical or electrochemical means,

placing the material in an aqueous electrolyte free from H_2SO_4 and containing from about 25 to about 500 grams per liter of H_3PO_4 and at least 5 grams per liter of Al^{+3} ions, said electrolyte being maintained at a temperature of from about 35° C. to about 95° C., and

anodically oxidizing the material at a current density of from about 1 A/dm^2 to about 30 A/dm^2 for a period of from about 5 to about 500 seconds, forming thereby an aluminum oxide layer on the surface of said material.

4,608,132

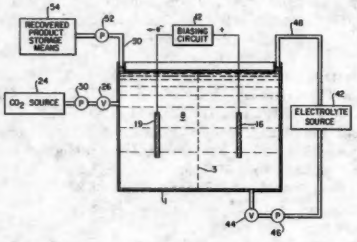
MEANS AND METHOD FOR THE ELECTROCHEMICAL REDUCTION OF CARBON DIOXIDE TO PROVIDE A PRODUCT

Anthony F. Sammells, Naperville, Ill., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 6, 1985, Ser. No. 741,781

Int. Cl.[4] C25B *3/04*

U.S. Cl. 204—59 R 25 Claims



14. A method for electrochemically reducing carbon dioxide to provide a product comprising the steps of:

containing an electrolyte solution including a non-aqueous electrolyte dimethylformamide with a supporting electrolyte,

dividing the electrolyte into two portions with a membrane,

providing carbon dioxide to one portion of the electrolyte,

placing an n-Si cathode in the portion of the electrolyte means receiving the carbon dioxide,

placing an anode in the portion of the electrolyte not receiving the carbon dioxide, and

providing a direct current voltage to the cathode and to the anode, to cooperate in a reaction between the carbon dioxide and the electrolyte solution to provide a product.

4,608,133

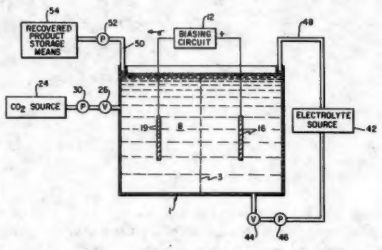
MEANS AND METHOD FOR THE ELECTROCHEMICAL REDUCTION OF CARBON DIOXIDE TO PROVIDE A PRODUCT

Abraham Morduchowitz, Monsey, N.Y., and Peter G. P. Ang, Naperville, Ill., assignors to Texaco Inc., White Plains, N.Y., a part interest

Filed Jun. 10, 1985, Ser. No. 743,123

Int. Cl.[4] C25B *3/00*

U.S. Cl. 204—59 R 48 Claims



25. A method for electrochemically reducing carbon dioxide to provide a product comprising the steps of:

contianing an electrolyte solution including a non-aqueous electrolyte with a supporting electrolyte,

dividing the electrolyte into two portions with a membrane,

providing carbon dioxide to one portion of the electrolyte,

placing a cathode in the portion of the electrolyte means receiving the carbon dioxide,

placing an anode in the portion of the electrolyte not receiving the carbon dioxide, and

providing a direct current voltage to the cathode and to the anode, to cooperate in a reaction between the carbon dioxide and the electrolyte solution to provide a product.

4,608,134

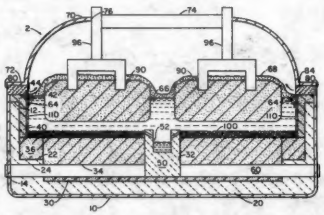
HALL CELL WITH INERT LINER

Melvin H. Brown, Freeport, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 22, 1985, Ser. No. 725,622

Int. Cl.[4] C25C *3/08, 3/22*

U.S. Cl. 204—67 20 Claims



7. A method of efficiently operating a Hall cell for the production of aluminum by electrolytic reduction from a molten salt bath wherein a containment vessel lined with insulation contains a carbon cathode bottom wall and sidewall and at least one anode protruding into said cell depends from an anode support rod passing through a cover over said cell, the improved method comprising:

(a) lining the carbon bottom wall of said cell with a conductive material resistive to attack by said molten salt bath to reduce the anode-cathode spacing to lower the electric power consumption per unit of reduced aluminum while protecting said carbon bottom wall from attach by molten aluminum:

(b) lining said carbon sidewall with a conductive sidewall lining material resistive to attack by said molten salt bath; and

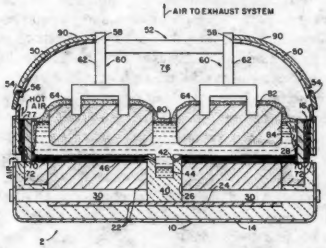
(c) selectively cooling an upper portion of said sidewall lining material adjacent the top of said molten salt bath to selectively form frozen bath on said sidewall lining adjacent the top of said molten bath to protect said sidewall lining exposed above said molten salt.

4,608,135

HALL CELL

Melvin H. Brown, Freeport, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 22, 1985, Ser. No. 725,623
Int. Cl.[4] C25C *3/06, 3/08, 3/22*
U.S. Cl. 204—67 11 Claims



10. A method of efficiently operating a Hall cell for the electrolytic reduction of aluminum in a molten salt bath in a manner which consumes less electrical power while maintaining sufficient heat within said cell to prevent freeze-up of the cell and withdrawing sufficient heat through the sidewall of the cell to form a protective layer of frozen bath over the carbon sidewall which comprises:

(a) providing adjacent at least the bottom surface of an anode in said cell a cathodic layer of a material capable of withstanding attack by molten aluminum whereby the anode-cathode spacing may be reduced to lower the current consumed and heat generated by said cell;

(b) circulating air from outside the cell over the outer surface of a carbon sidewall lining in said cell through passageways formed in the sidewall of said cell between said carbon sidewall lining and an insulating layer provided within an outer shell of said cell to cool the sidewall sufficiently to permit formation of a protective layer of frozen bath over said carbon sidewall; and

(c) circulating said air from said passageways heated by contact with said carbon sidewall across an area in the upper portion of said cell above said molten salt bath defined by said molten salt bath and a cover over said cell attached to said outer shell of said cell;

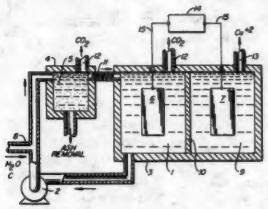
whereby at least a portion of the heat removed through said carbon sidewall by said air is returned to said cell to conserve sufficient heat in said cell to permit efficient operation without cell freeze-up.

4,608,136

OXIDATION OF CARBONACEOUS MATERIAL AND ELECTRODEPOSITION OF A METAL AT THE CATHODE OF AN ELECTROLYTIC CELL

Ronald J. Vaughan, deceased, late of Orinda, Calif., and by Bank of America NT&SA, administrator, Walnut Creek, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 653,980, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 496,798, May 23, 1983, abandoned. This application Jul. 26, 1985, Ser. No. 759,538
The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.
Int. Cl.[4] C25C *1/00*
U.S. Cl. 204—106 11 Claims



1. A method of electrowinning a metal from an aqueous acidic electrolyte solution containing ions of the metal at the cathode of an electrolytic cell by anode-assisted electrolysis comprising:

(a) passing an aqueous acidic electrolyte solution of pH 3 or less containing Fe^{+2} ions and ions of the metal to be deposited to an electrolytic cell comprising an anode and a cathode;

(b) passing a direct electric current through said solution thereby to deposit said metal on said cathode and to oxidize at least a portion of said Fe^{+2} ions to Fe^{+3} ions at the anode;

(c) passing said solution containing the Fe^{+3} ions from the cell;

(d) reducing the Fe^{+3} ion oxidation product in the aqueous acidic electrolyte solution to Fe^{+2} ions by contacting the same with a solid carbonaceous reducing agent containing less than 30% oxygen as carboxylic or carbonyl groups at a temperature in the range of from 120° C. to 350° C. and wherein the particle size of said solid carbonaceous reducing agent is from 1 to 150 microns; and

(e) recycling at least a portion of the aqueous acidic electrolyte containing the Fe^{+2} ions from step (d) to step (a); and with the proviso that the total iron concentration as either Fe^{+2} and/or Fe^{+3} in said aqueous acidic electrolyte is from about 0.04 to 0.5 molar.

4,608,137

PRODUCTION OF HYDROGEN AT THE CATHODE OF AN ELECTROLYTIC CELL

Ronald J. Vaughan, deceased, late of Orinda, and By Bank of America NT&SA, administrator, Walnut Creek, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 496,799, May 23, 1983, abandoned. This application Sep. 21, 1984, Ser. No. 653,660
The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.
Int. Cl.[4] C25B *1/02*
U.S. Cl. 204—129 6 Claims

1. A method of obtaining hydrogen comprising the steps:

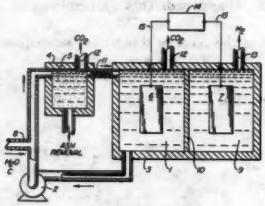
(a) passing an aqueous acidic electrolyte solution of pH 3 or

less containing Fe^{+2} ions to an electrolytic cell comprising an anode and a cathode;

(b) passing a direct electric current through said solution, thereby anodically oxidizing at least a portion of said Fe^{+2} ions to Fe^{+3} ions at the anode with generation of hydrogen at said cathode;

(c) passing said hydrogen and said Fe^{+3} ions from the cell;

(d) reducing the Fe^{+3} ion oxidation product in the aqueous acidic electrolyte solution to Fe^{+2} ions by contacting the



same with a solid carbonaceous reducing agent containing less than 30% oxygen as carboxylic or carbonyl groups at a temperature in the range of from 120° C. to 350° C. and wherein the particle size of said solid carbonaceous reducing agent is from 1 to 150 microns; and

(e) recycling at least a portion of the aqueous acidic electrolyte containing the Fe^{+2} ions from step (d) to step (a); and with the proviso that the total iron concentration as either Fe^{+2} and/or Fe^{+3} in said aqueous acidic electrolyte is from about 0.04 to 0.5 molar.

4,608,138

ELECTROLYTIC METHOD AND APPARATUS

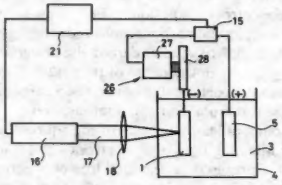
Minoru Kobayashi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1985, Ser. No. 701,219

Claims priority, application Japan, Feb. 16, 1984, 59-28199; Dec. 20, 1984, 59-268934

Int. Cl.[4] B23H *3/02*; C25D *17/06*; C25F *3/02*

U.S. Cl. 204—129.3 **11 Claims**



1. An electrolytic apparatus for applying voltage to a workpiece (1) and a counter electrode (5) immersed in an electrolyte (3) contained in a vessel (4) to thereby process said workpiece (1), said electrolytic apparatus comprising:

a voltage source (15, 15') for applying voltage between said workpiece (1) and said counter electrode (5) in the form of pulses whose polarity is periodically changed;

a beam generator (16) for irradiating a subsidiary energy beam (17) on a selected region of said workpiece (1) by generating said beam (17) in the form of periodic pulses;

a timing controller (21) for synchronizing the periods of said voltage pulses and said beam pulses; and

workpiece holder means (26) for controlling said voltage source (15') so that a voltage of reversed polarity with respect to that supplied during each beam pulse duration may be applied to said workpiece (1) on attachment of the same and then said voltage source (15') may start to generate said voltage pulses and be controlled by said timing controller (21) on setting of said workpiece (1) in place.

4,608,139

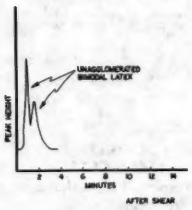
ELECTROCOATING PROCESS USING SHEAR STABLE CATIONIC LATEX

Gary P. Craun, Berea, and Kirk J. Abbey, Seville, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,251

Int. Cl.[4] C25D *13/06*

U.S. Cl. 204—181.7 **8 Claims**



1. In an electrocoating process which comprises:

(a) providing an amine functional cationic latex by emulsion polymerizing ethylenically unsaturated monomers and amino group containing monomers in an aqueous medium in the presence of a surfactant, a polymerization initiator and an organic or inorganic acid sufficient to at least partially neutralize said amine functional latex;

(b) formulating an electrocoating paint by combining said neutralized cationic latex with a pigment grind and diluting with deionized water to non-volatile content of 3–30;

(c) electrocoating an electrically conductive substrate serving as a cathode by passing an electric current between said cathode and an anode in contact with said electrocoating paint; and

(d) curing said coated substrate;

the improvement which comprises stabilizing against shear forces either the latex or the paint formulated thereform by conducting the said emulsion polymerization in a solvent/water system containing from about 10 weight percent to about 50 weight percent water-miscible or water-soluble organic solvent selected from the group consisting of C_{1-12} lower alkanols, ketones, esters, ethers, glycols, and alkoxyalkanols and by conducting the polymerization in the presence of one or more latent crosslinking agents adapted to enhance cure by reaction with functional groups on said polymer latex.

4,608,140

ELECTRODIALYSIS APPARATUS AND PROCESS

Arthur L. Goldstein, Weston, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Jun. 10, 1985, Ser. No. 743,219

Int. Cl.[4] C07K *3/14*; B01D *13/02, 13/01*

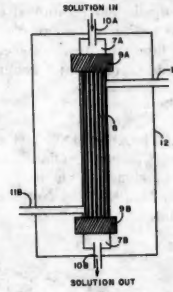
U.S. Cl. 204—182.3 **8 Claims**

5. A process for transferring electrolytes from a first solution located in depletion spaces of an electrodialysis apparatus to a second solution located in enriching spaces of said apparatus, said depletion and enriching spaces being separated from each other by electrolytically conducting barriers, the process comprising:

(a) introducing fluid under pressure into the bore of a fluid permeable tubule, said tubule being positioned in at least one of the depletion spaces of said apparatus to cause at least part of said introduced fluid to permeate said tubule and pass into said depletion space;

(b) applying a substantially direct electric current to such

apparatus to cause ions to migrate from said depletion space into said adjacently positioned enriching space; and

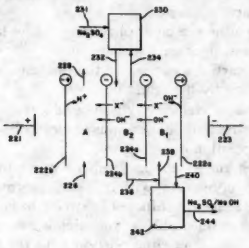


(c) withdrawing at least part of said first solution from said depletion spaces.

4,608,141
MULTICHAMBER TWO-COMPARTMENT ELECTRODIALYTIC WATER SPLITTER AND METHOD OF USING SAME FOR BASIFICATION OF AQUEOUS SOLUBLE SALTS

Frederick P. Chlanda, Rockaway, and Krishnamurthy N. Mani, Denville, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 7, 1984, Ser. No. 669,450
Int. Cl.⁴ B01D *13/02*
U.S. Cl. 204—182.5 **18 Claims**



1. A method for generating a basified solution and an aqueous acid comprising the steps of:

(a) providing an electrodialytic water splitter comprising at least one unit cell disposed between an anode and a cathode, a unit cell having at least a first base compartment, a second base compartment and an acid compartment arranged such that the acid compartment and first base compartment are defined in part by a common first membrane and such that the first base compartment and the second base compartment are defined in part by a common second membrane;

(b) introducing a liquid comprising water to the acid compartment;

(c) introducing a liquid comprising an aqueous soluble salt to the first base compartment;

(d) withdrawing liquid from the first base compartment and transferring at least a portion of the liquid from the first base compartment to the second base compartment;

(e) passing direct current through said electrodialytic water splitter to produce a liquid comprising aqueous acid in said acid compartment, a liquid comprising aqueous soluble salt and a first concentration of hydroxyl ions in said first base compartment, and a liquid comprising aqueous soluble salt and a second concentration of hydroxyl ions in said second base compartment, said second concentration of hydroxyl ions being greater than said first concentration of hydroxyl ions;

(f) withdrawing the liquid comprising aqueous soluble salt and a second concentration of hydroxyl ions from said second base compartment.

4,608,142
METHOD OF MANUFACTURING MAGNETO-OPTIC RECORDING FILM

Manabu Gomi, Ichikawa, and Masanori Abe, Otaku, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

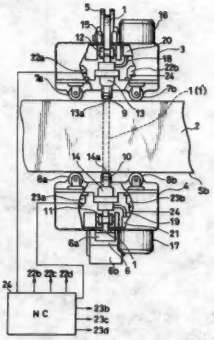
PCT No. PCT/JP84/00547, § 371 Date Sep. 17, 1985, § 102(e) Date Sep. 17, 1985, PCT Pub. No. WO85/02292, PCT Pub. Date May 23, 1985
PCT Filed Nov. 15, 1984, Ser. No. 763,789
Claims priority, application Japan, Nov. 17, 1983, 58-216750; Jan. 17, 1984, 59-6134; Mar. 23, 1984, 59-55787
Int. Cl.⁴ C23C *15/00*
U.S. Cl. 204—192 M **15 Claims**

1. A method of manufacturing a magneto-optic recording film wherein a vertically magnetized film of a Bi-substituted rare-earth iron garnet is formed on a substrate, characterized in that a target consisting of an oxide containing at least Bi atoms, Fe atoms and rare-earth element atoms is sputtered, and the atoms constituting the oxide which are released from the target by sputtering are deposited on the substrate which is held at a temperature of 700° C. or lower, thereby forming the vertically magnetized film consisting of the Bi-substituted rare-earth iron garnet.

4,608,143
TW-ELECTROEROSION APPARATUS WITH WHEELED DRIVE CARRIAGES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohamashi, Japan

Filed Oct. 17, 1984, Ser. No. 661,713
Claims priority, application Japan, Oct. 18, 1983, 58-193337; Nov. 9, 1983, 58-209209
Int. Cl.⁴ B23H *7/10, 7/26;* **B23K** *7/16*
U.S. Cl. 204—224 M **4 Claims**



1. An apparatus for machining a conductive workpiece by means of a continuous electroeroding electrode axially traveling continuously through the workpiece from one side thereof to the other side thereof, the apparatus comprising:

a first wheeled carriage disposed at said one side and carrying a storage of said continuous electrode to be gradually dispensed, the first carriage having a set of wheels in frictional engagement with a first surface disposed in said one side;

a second wheeled carriage disposed at said other side and

carrying a means for collecting the electrode traveling from the workpiece, the second carriage having a set of wheels in frictional engagement with a second surface disposed in said other side;

a frist and a second electrode guide means mounted on said first and said second wheeled carriage, respectively, for establishing therebetween a straight-line electrode path across the workpiece;

electrode feed means including a forward traction means mounted on said second wheeled carriage for advancing the electrode dispensed from said storage, axially along said straight-line path towards said collecting means and a backward traction means mounted on said first wheeled carriage for applying a braking traction to the advancing electrode to maintain it traveling forwards in alignment with said path while generating a tension force in the traveling electrode, acting on said wheels of the first and second carriages to force them against said first and second surfaces, respectively, thereby intensifying their respective frictional engagement therewith; and

machining feed means including a first and a second drive means mounted on said first and second carriages, respectively, for rotationally driving their respective sets of wheels in intensified frictional engagement with said surfaces so that said first and second carriages accurately roll over said first and second surfaces, respectively, so as to allow said straight-line path to move, leaving a programmed movement trajectory, relative to the workpiece to advance electroerosion along said trajectory in the workpiece.

4,608,144

ELECTRODE AND ELECTROLYTIC CELL

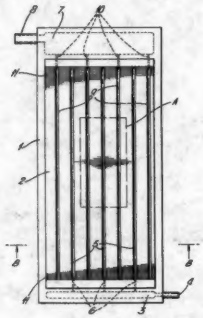
Brian J. Darwent, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Mar. 11, 1985, Ser. No. 710,293

Claims priority, application United Kingdom, Mar. 27, 1984, 8407871

Int. Cl.[4] C25B *9/00, 11/03, 11/04*

U.S. Cl. 204—257 **22 Claims**



15. An electrolytic cell, comprising:

at least one anode;

at least one cathode; and

a separator positioned between and separating from a said cathode each said anode which adjoins a respective said cathode;

at least one of said anode and cathode being provided as an electrode comprising:

a base member having on at least one face thereof a plurality of first major channels closed at one end and provided at the other end thereof with means for feeding liquors thereto;

a plurality of second major channels closed at one end and provided at the other end thereof with means for removing liquors therefrom; and

a plurality of minor channels of smaller cross-section than said major channels and positioned between said first major channels and second major channels and providing means for liquor to flow between said first major channels and said second major channels.

4,608,145

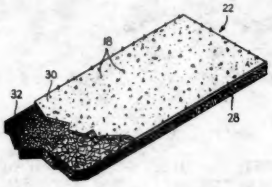
ELECTROPLATING TAPE

Norman P. Fairbanks, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 23, 1984, Ser. No. 633,742

Int. Cl.[4] C25D *17/00*

U.S. Cl. 204—279 **2 Claims**



1. A multisegment electrically non-conductive electroplating tape for carrying abrasive particles on a surface thereof, comprising:

a first electrically non-conductive tape segment,

(a) having pores large enough to allow passage therethrough of electrodeposition current and electrolyte solution but smaller than the size of abrasive particles to be retained on the first tape segment;

(b) a porous adhesive layer of relatively low tack level on a first segment operating surface; and

(c) abrasive particles carried on the first tape segment operating surface by the adhesive;

at least one second electrically non-conductive tape segment,

(a) being substantially impervious to electrolyte solution and electrodeposition current,

(b) including on a second segment operating surface intended to cooperate with the first segment operating surface an adhesive sufficiently strong to hold the second tape segment releasably at an article surface, and

(c) at least sharing an edge portion with the first tape segment.

4,608,146

HORIZONTAL ELECTROPHORESIS CELL FOR RAPID ASSEMBLY

William A. Penaluna, Pinole, Calif., assignor to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Apr. 9, 1985, Ser. No. 721,269

Int. Cl.[4] G01N *27/28*

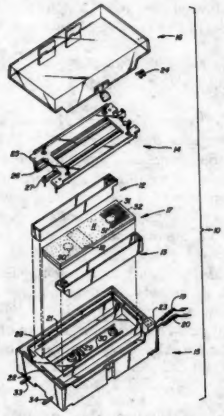
U.S. Cl. 204—299 R **30 Claims**

1. In an apparatus for electrophoresis across a horizontally disposed separation medium, said apparatus including a support surface capable of supporting said separation medium and having an opposing pair of side edges and an opposing pair of end edges, a pair of open receptacles capable of retaining buffer solutions, and a housing capable of retaining said support surface and one of said receptacles along each of said side edges, said housing having positive and negative terminals adapted for connection to a power supply, the improvement comprising:

a pair of first electrical contacts in said housing electrically connected to said positive and negative terminals, respectively; and

a pair of exposed leads, one said lead inside each said recepta-

cle, said leads electrically connected to a pair of second electrical contacts respectively;



one of said first and second pairs of electrical contacts being spring-loaded and adapted to compress against the other of said first and second pairs of electrical contacts when said receptacles are placed in said housing.

4,608,147

APPARATUS FOR THE ELECTRO-ELUTION AND COLLECTING OF ELECTRICALLY CHARGED MACROMOLECULES IN A TRAP

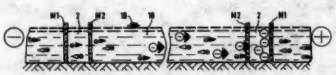
Andreas Clad, Freiburg, Fed. Rep. of Germany, assignor to Carl Schleicher & Schuell GmbH & Co. KG, Einbeck, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,922

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1983, 3337669

Int. Cl.[4] B01D *13/02*; G01N *27/28*

U.S. Cl. 204—301 **18 Claims**



1. Apparatus for the electro-elution of electrically charged macromolecules, comprising a cuboid or plate-like body, said body having at least one elongate channel extending from one end to the opposite end of said body, said channel opening up at both ends of said body, said channel being open at least partially at the top of said body, an inner membrane disposed in at least one end portion of said body and extending generally transversely of the longitudinal axis of said channel, an outer membrane disposed in a position spaced from said inner membrane to define therebetween a section of said channel which forms a trap space, said outer membrane being permeable in the presence of an electric field to water and to small ions and molecules, and impervious to the macromolecules which are to be eluted, said inner membrane in the presence of an electric field being permeable to ions and molecules and therefore to the macromolecules to be eluted, the inner and outer membranes in the absence of an electric field being impermeable to water and buffers used with the apparatus, whereby macromolecules pass through said inner membrane into said trap space and are trapped in said trap space.

4,608,148

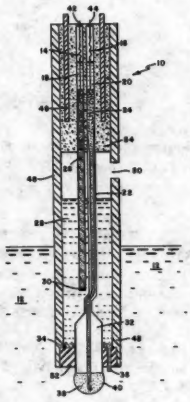
COMBINATION PH/REFERENCE ELECTRODE WITH IMPROVED TEMPERATURE RESPONSE

Dominick Frollini, Jr., Trafford; Dennis G. Falconer, Gibsonia, and Kenneth J. Kato, Export, all of Pa., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 670,855, Nov. 13, 1984, abandoned. This application Jan. 31, 1986, Ser. No. 823,989

Int. Cl.[4] G01N *27/30*

U.S. Cl. 204—408 **10 Claims**



1. An electrode structure for pH measurements at a variety of temperatures within a temperature range which combines indicator and reference electrode functions, consisting of an outer annual space containing an electrochemical reference electrically connected to the sample solution through a secondary electrolyte and at least one junction, and an inner annular space containing a second electrochemical reference in contact with a pH fill buffer, the pH fill buffer being in contact with a sensing membrane formed at the end of the inner annular space, characterized by:

(a) the first and second electrochemical references being thermally insulated from the sensing membrane sufficiently to have matched thermal gradients when the temperature of the sample solution outside of the sensing membrane changes and being in thermal communication with each other;

(b) that portion of the pH fill buffer in contact with the inner surface of the sensing membrane being thermally insulated by salt crystals covering the interior of the sensing membrane from the remainder of the pH fill buffer so that the portion can rapidly equilibrate in temperature with the sample solution outside the sensing membrane;

(c) the pH fill buffer solution exhibiting substantially constant pH over a temperature range of −5° C. to 100° C.

4,608,149

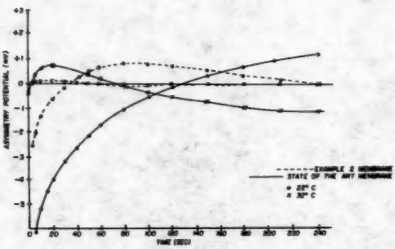
POTASSIUM ION-SELECTIVE COMPOSITIONS AND ELECTRODES CONTAINING SAME

Daniel S. Daniel, and Thomas R. Kissel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 506,246, Jun. 20, 1983. This application Sep. 30, 1985, Ser. No. 781,364

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—418 16 Claims



1. A potassium ion-selective composition comprising valinomycin and diisodecyl phthalate.

4,608,150

PITCH MATERIAL FOR CARBONACEOUS BODY AND A METHOD FOR THE PREPARATION THEREOF

Masnaki Itoi; Masakatsu Ohta; Taizo Sugioka; Kunio Yoshihara, all of Sodegaura, and Hiroshi Nishitani, Kisarazu, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Mar. 11, 1985, Ser. No. 710,021

Claims priority, application Japan, Mar. 26, 1984, 59-56211

Int. Cl.[4] C10C *1/00, 3/00*

U.S. Cl. 208—22 8 Claims

1. A pitch material for carbonaceous body which is characterized by the parameters of:

(a) a content of the optically anisotropic phase in the range of at least 80%;

(b) a content of the pyridine-insoluble matter in the range from 30 to 70% by weight;

(c) a number average molecular weight in the range from 1000 to 1400; and

(d) a softening point in the range from 330° to 380° C.

4,608,151

PROCESS FOR PRODUCING HIGH QUALITY, HIGH MOLECULAR WEIGHT MICROCRYSTALLINE WAX DERIVED FROM UNDEWAXED BRIGHT STOCK

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 6, 1985, Ser. No. 806,079

Int. Cl.[4] C10G *73/08, 73/44*

U.S. Cl. 208—33 19 Claims

1. A process for preparing high molecular weight microcrystalline wax from a hydrocracked, undewaxed bright stock, comprising:

(a) contacting said bright stock with hydrogen in the presence of a catalyst having hydrodenitrification activity under conditions effective to reduce the nitrogen content of said stock to produce a substantially nitrogen-free product;

(b) contacting said substantially nitrogen-free product with hydrogen in the presence of a catalyst having hydrogenation activity under mild conditions to produce a wax-containing oil; and

(c) solvent dewaxing said wax-containing oil to produce high molecular weight microcrystalline wax.

4,608,152

HYDROVISBREAKING PROCESS FOR HYDROCARBON CONTAINING FEED STREAMS

Jerald A. Howell, and Simon G. Kukes, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 30, 1984, Ser. No. 677,134

Int. Cl.[4] C10G *45/04, 45/60, 47/02, 49/04*

U.S. Cl. 208—108 22 Claims

1. A process for hydrovisbreaking a hydrocarbon-containing feed stream comprising the steps of:

introducing a decomposable molybdenum additive selected from the group consisting of a mixture of a molybdenum dithiophosphate and a molybdenum carboxylate and a mixture of a molybdenum dithiocarbamate and a molybdenum carboxylate into said hydrocarbon-containing feed stream; and

contacting said hydrocarbon-containing feed stream containing said decomposable molybdenum additive under hydrovisbreaking conditions with hydrogen, wherein said contacting is carried out in the absence of a solid support for said decomposable molybdenum additive.

4,608,153

PROCESS FOR THE REMOVAL OF POLYNUCLEAR AROMATIC HYDROCARBON COMPOUNDS FROM ADMIXTURES OF LIQUID HYDROCARBON COMPOUNDS

Carl W. Hudson, and Glen P. Hamner, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 635,729, Jul. 30, 1984, abandoned. This application Jul. 31, 1985, Ser. No. 760,961

Int. Cl.[4] C10G *45/46, 45/60, 47/12*

U.S. Cl. 208—112 27 Claims

1. A process for removing polynuclear aromatic hydrocarbons from a feed characterized as a molecular admixture of polynuclear aromatic hydrocarbon-containing hydrocarbons having a high end boiling point below about 540° C. (1004° F.) a sulfur level below about 5000 ppm, and nitrogen level below about 5000 ppm which comprises:

contacting said feed, in the presence of hydrogen, over a catalyst comprised of elemental iron and one or more alkali or alkaline-earth metals components at a temperature ranging from about 225° C. (437° F.) to about 430° C. (806° F.) and hydrogen partial pressure ranging from about 0 psig to about 1000 psig sufficient to hydrogenate and hydrocrack the polynuclear aromatic hydrocarbon molecules of the molecular hydrocarbon admixture without excessively hydrogenating and hydrocracking the non-polynuclear aromatic hydrocarbon molecules of said feed.

4,608,154

PROCESS FOR THE FLOTATION OF INSOL FROM SYLVINITE ORE

Simon Chan; Eli Slorstad; Henry D. A. Cormode, and Richard R. Tamosiunis, all of Saskatoon, Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Nov. 20, 1984, Ser. No. 673,253

Claims priority, application Canada, Nov. 22, 1983, 441,653

Int. Cl.[4] B03D *1/02*

U.S. Cl. 209—166 25 Claims

1. A process for the selective flotation of insol containing clays, dolomite, anhydrite and hematite from a sylvinite ore which process comprises the steps of pulping the ore; conditioning the ore pulp with an alkyl amine collector for insol chosen from the group consisting of primary alkyl amines, secondary alkyl amines, and primary ether alkyl amines, said alkyl amine collector for insol being added in an amount in the range of about 0.4 to 10 g collector per tonne of ore, and with a suitable flocculant added in an amount of at least about 5 g

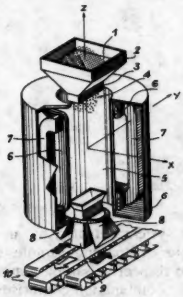
flocculant per tonne of ore; subjecting the conditioned ore pulp to froth flotation; and removing the flotated insol.

4,608,155

MAGNETIC SEPARATOR

Henri Desportes, Gif sur Yvette, and Joao Meyer, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 26, 1984, Ser. No. 634,570
Claims priority, application France, Aug. 3, 1983, 83 12797
Int. Cl.[4] B03C 1/26
U.S. Cl. 209—224 5 Claims



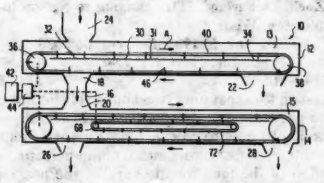
1. A magnetic separator for separating magnetic particles from non-magnetic particles comprising a vertically oriented separation chamber; an inlet for particles to be separated at the top of the chamber, means for collecting magnetic particles and non-magnetic particles at the bottom of the chamber; multiple magnetic field producing means for producing, in the separation chamber, a magnetic field comprising a quadrupole magnetic field configuration superimposed on a dipole magnetic field configuration thereby defining a magnetic field gradient in the horizontal plane.

4,608,156

MULTI-SCREEN GRAIN SEPARATOR

Arthur O. Reddish, Jr., 4121 S. 37th, Lincoln, Nebr. 68506

Filed Oct. 21, 1981, Ser. No. 313,709
Int. Cl.[4] B07B 1/52
U.S. Cl. 209—353 15 Claims



1. A separating apparatus for classifying particulate material according to size comprising:

a cleaning sub-housing defining a chamber enclosing a substantially horizontally extending cleaning screen, said sub-housing having a top wall disposed above said screen with an inlet located vertically above an upstream end of said cleaning screen, said sub-housing having a bottom wall disposed beneath said screen with a first outlet located beneath said upstream end and aligned with said inlet and said bottom wall having a second outlet located beneath a downstream end of said screen;

conveyor mounted paddle means for repeatedly sweeping particulate material along a top surface of said cleaning screen from said upstream end toward said downstream end;

conveyor mounted protrusion means for repeatedly sweeping a bottom surface of said cleaning screen from said upstream end toward said downstream end; and

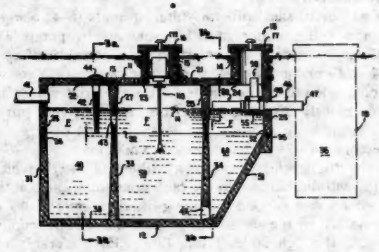
biasing means for biasing said protrusion means into continuous contact with said bottom surface of said cleaning screen comprising at least one compression spring compressed between a surface rigidly mounted within said sub-housing and a floating channel member confronting and extending parallel to said cleaning screen, whereby said at least one compression spring biases said floating channel member against a plurality of said protrusion means, pressing said protrusion means against the bottom surface of said cleaning screen, thereby freeing said cleaning screen of impurities which inadvertently become embedded therein.

4,608,157

WASTEWATER TREATMENT PLANT

Jan D. Graves, Norwalk, Ohio, assignor to Norwalk Wastewater Equipment Company, Norwalk, Ohio

Division of Ser. No. 388,246, Jun. 14, 1982, Pat. No. 4,505,813.
This application Mar. 11, 1985, Ser. No. 710,587
The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.
Int. Cl.[4] C02C 1/02
U.S. Cl. 210—86 18 Claims



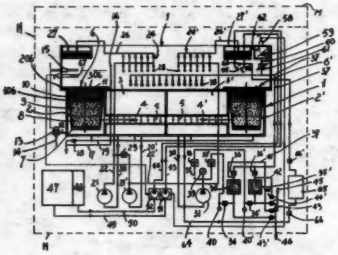
1. A wastewater treatment plant comprising means for defining a pretreatment chamber, means defining an inlet for introducing fluid into said pretreatment chamber, means for defining an aeration chamber, means for conducting fluid from said pretreatment into said aeration chamber, rotating means for aerating the fluid in said aeration chamber, means for defining a clarification chamber, means for conducting fluid from said aeration chamber into said clarification chamber, means defining an outlet for discharging the fluid from said clarification chamber, means for filtering the fluid discharging from said clarification chamber, said filtering means being constructed and arranged for increasing its filtering capacity in response to fluid level rise in said clarification chamber, and said rotating aerating means including means for responding to an inoperative condition of said filtering means and a corresponding rise in the fluid level in said aeration chamber for indicating fluid treatment malfunction.

4,608,158

FEEDING INSTALLATION FOR THE DAMPENING SOLUTION IN OFFSET PRINTING PROCESSES

Luigi Ghisalberti, Paladina, and Marco Fumagalli, Oggiono, both of Italy, assignors to Web Italia S.r.l., Villanova di Castenaso, Italy

Filed Apr. 11, 1985, Ser. No. 722,033
Claims priority, application Italy, Aug. 1, 1984, 12578 A/84
Int. Cl.[4] B01D *29/42*
U.S. Cl. 210—96.1 8 Claims



1. An installation for continuously feeding, renewing and conditioning the dampening solution in a lithographic printing process, characterized in that it comprises:

a tank (1) for containing the required amount of solution, said tank being connected through a solenoid valve (13) to a source (14) of sufficiently clean and softened water and being provided with a level-detecting probe (15) controlling said solenoid valve (13) to maintain the liquid in the tank at a constant level, said tank being also provided with an overflow outlet and with bottom drain outlets for complete emptying;

two softening-filtering units (6–4, 6'–4') for the solution in the tank (1), said units being suitably integrated within said tank and adapted to operate on the solution being continuously circulated in said tank;

the first one of said softening-filtering units (6–4) being connected to the suction of at least one electro-pump (21) the delivery of which is connected to a plurality of ejectors (24—24') or "jet-pumps" the suction opening (28) of which is connected to the discharge duct of the printer fountains to continuously discharge therefrom, for renewing purposes, the dampening solution, while the outlets of the various ejectors (24—24') are connected to manifold ducts (26—26') freely discharging into gravity filters (27—27') which, in turn, will discharge into the tank containing the solution;

the second one of said softening-filtering units 6'–4') being connected to the suction of at least one electro-pump (31) which, through at least one filter (35) preferably of the pressure type, delivers the dampening liquid to a plurality of injectors (38) having connected thereto the ducts feeding the solution to the fountains of the printing press;

containers (47–48) for the chemical additives to be mixed in the water, e.g. alcoholic and acid additives, said containers being provided with discharge ducts connected to respective electro-pumps (51–52) discharging into a high-turbulence area of the tank (1) containing the solution, said electro-pumps being preferably of small flowrate and of volumetric type and being controlled by respective circuits comprising probes (57–58) for detecting either directly or indirectly the pH and density of the dampening solution and which, through electronic processing and comparing devices, enable the selection of the desired values of pH and density and, through said electro-pump, permit said parameters to be maintained at the selected values;

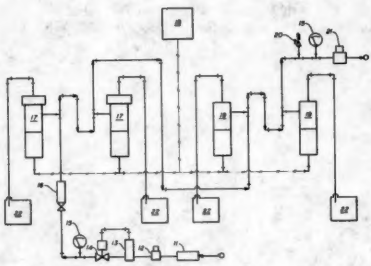
a circuit (63–64–65) which withdraws the solution from one of said softening-filtering groups and which suitably cools the solution to a thermostat-controlled value.

4,608,159

BOILER WATER/BOILER FEED WATER AUTOMATIC SAMPLER SYSTEM

Henry R. Collins, Jr., Livingston, Tex., assignor to Collins Products Company, Inc., Livingston, Tex.

Filed Apr. 23, 1984, Ser. No. 602,818
Int. Cl.[4] C02F *1/02*
U.S. Cl. 210—101 10 Claims



1. In a sampling system actuated by an external actuator means for continuously dispensing samples of boiler water or boiler feed water to respective sample stations for analysis as herein described, the combination comprising:

(a) source means supplying the sample water below a prescribed temperature and within a prescribed pressure range;

(b) flow regulating means including flow indicator means for providing the sample water at a prescribed flow rate to a plurality of sampler dispensing means;

(c) back pressure regulator means for supplying a prescribed back pressure to said sample water which is entering into said sample dispensing means;

(d) each said sampler dispensing means comprising:

(1) a piston and cylinder means supplying a prescribed volume of sample water to said sample station with each compressive stroke of the piston into the cylinder;

(2) driver means successively driving said piston into said cylinder at a rate prescribed by said external actuator; and

(3) said back pressure returning said piston as an intake stroke between each said compressive stroke.

4,608,160

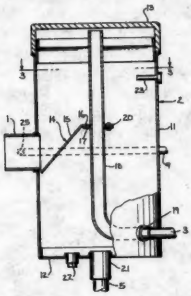
SYSTEM FOR SEPARATING LIQUIDS

Roger L. Zoch, McFarland, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Filed Nov. 5, 1984, Ser. No. 668,630
Int. Cl.[4] C02F *1/40*
U.S. Cl. 210—114 5 Claims

1. In a system for separating two immiscible liquids of different specific gravities, a vertically disposed generally cylindrical tank having an inlet to receive a mixture of a lighter liquid and a heavier liquid, first outlet means communicating with the lower portion of the tank for discharging the heavier liquid, second outlet means communicating with the upper portion of the tank for discharging said lighter liquid, separator means in said tank and comprising a single generally flat plate disposed in said tank in direct alignment with said inlet, said plate being inclined upwardly and away from said inlet and extending upwardly from a level beneath said inlet to a level above said inlet and toward said second outlet means, said plate having an upper edge extending generally chordwise of said tank and having a lower curved edge disposed generally contiguous to the inner surface of said tank, approximately one half of the cross sectional area of the tank throughout the entire height of the tank being unobstructed whereby said mixture entering the tank through said inlet is deflected upwardly by said plate and said lighter liquid is collected as a layer in the upper end of said

tank for discharge through said second outlet means and said heavier liquid flows downwardly through the unobstructed



cross sectional area of said tank for discharge through said first outlet means.

4,608,161

HEATABLE FUEL FILTER FOR DIESEL ENGINES

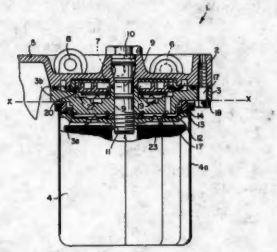
Gerd Niemeier, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 26, 1985, Ser. No. 727,431

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1984, 3415522

Int. Cl.[4] B01D *23/00*; F02M *31/00*

U.S. Cl. 210—149 **13 Claims**



1. A fuel filter for a motor vehicle engine, said fuel filter having heating element means positioned between filter head means and filter box means, said filter box means including: fuel collecting means for collecting and containing residual fuel remaining in said filter head means and said heating element means when said filter head means is detached from said filter, said fuel collecting means including means for preventing residual fuel from discharging to the surrounding area when said filter head means is detached from fuel filter.

4,608,162

ROTATING BIOLOGICAL CONTACTOR APPARATUS

Robert W. Hankes, Downington, Pa., and Lloyd H. Parker, Winona, Ohio, assignors to Crane Co., New York, N.Y.

Continuation of Ser. No. 291,723, Aug. 10, 1981, Pat. No. 4,444,658. This application Feb. 9, 1984, Ser. No. 579,141

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] C02F *3/08*

U.S. Cl. 210—150 **2 Claims**

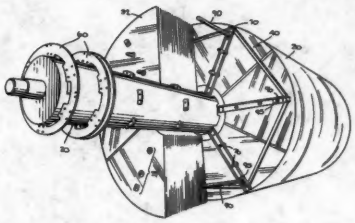
1. A biological water treatment apparatus, comprising:

a tank;

a shaft mounted for rotation in said tank and having a plurality of circumferential rows of bayonette lugs;

a plurality of contactor media packs;

a plurality of frames each supporting a separate one of said plurality of contactor media packs thereon, each frame including a circular collar adapted to fit about said shaft and to be removably secured to one of said plurality of circumferential rows of bayonette lugs, each collar having



an inner surface with a plurality of recesses substantially uniformly positioned in the inner surface, wherein the recesses of the collar and said shaft define flow passages along the shaft when a collar is secured to said shaft to provide for the relatively uniform flow of air therethrough; and

first means for securing each collar to the respective one row of bayonnette lugs.

4,608,163

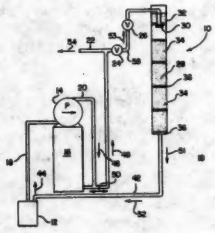
APPARATUS FOR PURIFICATION OF CONTAMINATED GROUNDWATER

Thomas L. Yohe, 1406 Morstein Rd., and Karl M. Kyriss, 1554 Mill Race La., both of West Chester, Pa. 19380

Division of Ser. No. 570,299, Jan. 13, 1984, Pat. No. 4,526,692. This application Apr. 3, 1985, Ser. No. 719,549

Int. Cl.[4] C02F *1/74*

U.S. Cl. 210—150 **5 Claims**



1. In a domestic water supply system comprising a well having a well head, an improved water delivery and purification system comprising:

a water treatment unit, said water treatment unit comprising a packed column filled with filter material;

means providing a flow path for flow of water from the well through the well head, through the water treatment unit, and back to the well through said well head;

pumping means, located in said flow path, for pumping water through said flow path; and

a water service line connected between said flow path and a point of use;

said pumping means also serving to pump water from said flow path to the point of use.

4,608,164
MEMBRANE FILTER PLATE

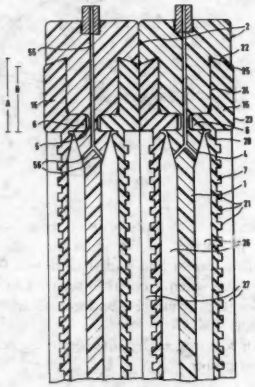
Werner Neu, Langenhagen, Fed. Rep. of Germany, assignor to Hansen-BTR GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 31, 1985, Ser. No. 697,072

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1984, 3403163; Jun. 18, 1984, 3422574; Jul. 2, 1984, 3424325; Aug. 27, 1984, 3431401

Int. Cl.[4] B01D *25/12*

U.S. Cl. 210—231 21 Claims



1. A membrane filter press comprises a plurality of membranes of elastomeric material sandwiched between base plates,

each of said base plates having a central recess bounded by an inclined surface sloping up to a lower inner peripheral portion surrounded by a higher outer peripheral portion and having a circumferential groove adjacent the boundary between said inclined surface and said lower inner peripheral portion, and

each of said membranes being substantially planar non-cup-shaped in unstressed condition and having a marginal portion seating on said lower inner peripheral portion of said base plate and having a thickness slightly greater than the difference in height between said lower inner peripheral portion and said higher outer peripheral portion, and a circumferential rib received in said groove of said base plate,

surfaces of said higher outer peripheral portions of adjacent base plates seating on one another in compressed condition of said press and constitution sealing surfaces providing a pressure seal between adjacent base plates.

4,608,165
LIQUID SURFACE SKIMMING TROUGH ASSEMBLY

Sam Galper, Islington, Canada, assignor to Samdor Engineering Limited, Islington, Canada

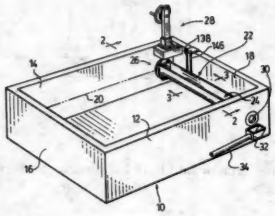
Filed Apr. 8, 1985, Ser. No. 721,041

Int. Cl.[4] E02B *15/04*

U.S. Cl. 210—232 24 Claims

1. A bearing assembly comprising means for mounting a skimming trough in an upper region of a tank for rotation in skimming a liquid layer from an upper region of tank contained liquid, said bearing assembly having a housing with an opening to receive a cylindrical bearing sleeve portion of a skimming trough, at least three spaced-apart rollers being mounted within said housing for contacting a cylindrical bearing sleeve portion of a skimming trough, each of said rollers being mounted in said housing to rotate about an axis which extends in a direction generally parallel to an axis of rotation for a skimming trough mounted in said bearing, said rollers being arranged about said housing opening relative to said axis of rotation of a skimming trough, said rollers being arranged in said housing to position at least one roller in the upper region of said housing when in sue on a skimming trough, said housing having a sealing means for sealing said rollers within a sealed cavity defined between said housing and a cylindrical bearing sleeve of a skimming trough mounted in said bearing assembly, and means associated with said housing for permitting insertion into said cavity of a substance for resisting migration through said sealing means of impurities from tank contained liquid.

23. A skimming trough comprising means for use in skimming a liquid layer from an upper region of a tank contained liquid, said trough being generally U-shaped in cross-section and extending appreciably in length to span supporting structures of a tank, said trough including an assembled plurality of extruded aluminum, alloy sections consisting of opposing bottom circular segments and opposing upright side wall sections, said circular segments being of identical cross-section and said upright side wall sections being of identical cross-section, said circular segments having edge portions adapted for connection to one another along trough lower portion and remaining edge portions adapted for connection to said trough side walls.



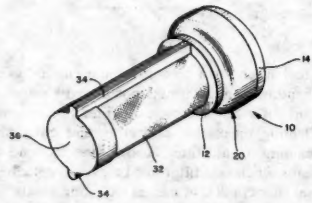
4,608,166
PRESS FIT FILTER

Thomas A. Cain, Woodstock, Ill., assignor to Filtertek, Inc., Hebron, Ill.

Filed Apr. 1, 1985, Ser. No. 718,726

Int. Cl.[4] B01D *25/02*

U.S. Cl. 210—232 16 Claims



6. In a press fit filter of the type having a base supporting filtration material, said base configured to fit within a fitment hole, the improvement comprising:

(a) a metal collar surrounding at least a portion of the base,

(b) said collar having

(i) a leading edge embedded in the base,

(ii) a rounded entry corner adjacent to the leading edge to provide a smooth metal surface in contact with an entrance corner and wall of the fitment hole, thereby preventing shearing of particles from the sides of the fitment hole during press fitting of the filter into the fitment hole, and

(iii) a plurality of tabs at the distal end of the collar embedded in the base sufficient for preventing the collar from

slipping apart from said base during temperature changes of the filter.

4,608,167

SKIMMING WEIRS

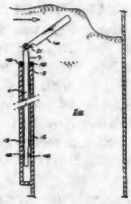
Johann N. Raubenheimer, Bedfordview, South Africa, assignor to Fahet NV, Curacao, Netherlands Antilles

Filed Aug. 27, 1985, Ser. No. 769,744

Claims priority, application South Africa, Nov. 2, 1984, 84/8586

Int. Cl.[4] E04H *3/20*

U.S. Cl. 210—242.1 2 Claims



1. A skimmer weir composed of buoyant upper flap and a lower flap, said two flaps being hinged together, means for guiding said lower flap for substantially vertical movement in a fixed path, stop means for limiting the upward movement of said lower flap, and means inhibiting upward movement of said lower flap once said upper flap bends under the flow of a stream of water.

4,608,168

DISTRIBUTION FILTER NOZZLES AND FILTERS INCORPORATING SAME

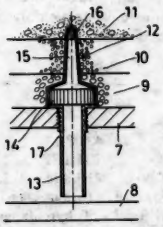
Richard P. Moore, Germiston, South Africa, assignor to Blue Circle Projects (Proprietary) Ltd., Johannesburg, South Africa

Filed Jun. 15, 1982, Ser. No. 388,526

Claims priority, application South Africa, Jun. 17, 1981, 81/4146

Int. Cl.[4] B01D *23/20*

U.S. Cl. 210—274 10 Claims



1. In a filter having at least two layers of particulate filter media with a first, fine filter media supported on a second, coarse lower layer, the improvement comprising: (a) at least one nozzle assembly communicating with at least one filter outlet passage, the nozzle assembly defining two vertically spaced sets of perforated nozzle surfaces a first, upper set of perforated nozzle surfaces extending into the first, fine filter media and defining first openings of a given size, and a second, lower set of perforated nozzle surfaces extending into the lower layer of coarse filter media and defining second openings of greater size than the first openings; (b) means for introducing liquid into the second, lower nozzle surface for backwashing said particulate filter media; and (c) means for introducing air into the first, upper nozzle surfaces, said means located at a higher level than said means for introducing liquid into the second, lower set of perforated nozzle surfaces.

4,608,169

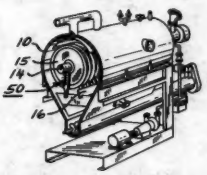
FILTER BRUSH

Kostas S. Arvanitakis, 14945 S. Dogwood Ave., Orland Park, Ill. 60462

Filed Jul. 15, 1985, Ser. No. 755,440

Int. Cl.[4] B01D *25/32*

U.S. Cl. 210—334 15 Claims



1. A brush assembly for cleaning expended filter cake from filter elements mounted on a filter tube through which a clarified liquid is passed after having solids materials removed therefrom upon passing unclarified liquid through the filter cake supported on the septum of the filter element, and for scrubbing the filter septum after removal of the expended filter cake, the brush assembly comprising

at least two parallel extending brush arms each of said brush arms having a first face positioned adjacent to each other and an opposed second face supporting brushing means for engaging a filter element,

brush arm support means secured to one end of each of said brush arms and adapted to be supported from a filter tube to position said brush arms between adjacent filter elements with each of said brushing means engaging one of the adjacent filter elements, and

spring biasing means supported between and engaging each one of said brush arm support means and each one of said brush arms for applying an outwardly directed separating force therebetween biasing said brushing means into engagement with an adjacent filter element with a force determined by the spring rate of said spring biasing means.

4,608,170

ANGULARLY ADJUSTABLE BREAKER VALVE-DISCHARGE ELBOW FOR ROTARY DRUM FILTERS

Richard W. LaValley, Vancouver, Wash., assignor to LaValley Industrial Plastics, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 750,320, Jun. 28, 1985, which is a continuation-in-part of Ser. No. 737,824, May 24, 1985. This application Aug. 16, 1985, Ser. No. 766,768

Int. Cl.[4] B01D *33/06*

U.S. Cl. 210—404 21 Claims

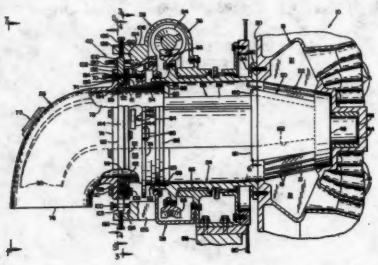
1. In a rotary drum filter of the type having a vacuum breaker valve housing within one end of the drum and stationary drum support means at the same end of the drum, a vacuum breaker valve-discharge elbow assembly comprising:

a stationary valve member, including a valve closure segment at an inlet end thereof for insertion in the valve housing of the drum and a valve discharge end including valve connecting means,

a discharge elbow defining a flow passage therethrough and including elbow inlet and outlet ends, said elbow inlet end including elbow connecting means,

a valve mounting means positioned between said valve connecting means and said elbow connecting means, said valve mounting means including first connecting means

for connecting said mounting means to the drum support means, second connecting means independent of said first connecting means for connecting said mounting means to the valve connecting means, and third connecting means independent of said first and second connecting means for connecting the mounting means to the elbow connecting means, whereby said elbow and said valve member are



independently mounted to said mounting means and supported by said mounting means from said drum support means,

said valve connecting means comprising a clamping means in surrounding relationship to and separable from said valve member for clamping the valve member against said valve mounting means.

4,608,171

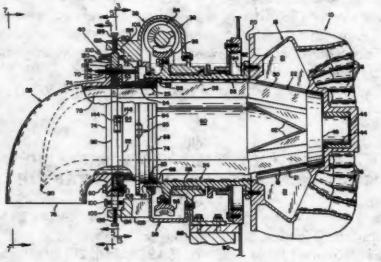
ADJUSTABLE MOUNTING FOR VALVE-DISCHARGE ELBOW OF ROTARY DRUM FILTERS

Richard W. LaValley, Vancouver, Wash., assignor to LaValley Industrial Plastics, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 737,824, May 24, 1985. This application Jun. 28, 1985, Ser. No. 750,320

Int. Cl.[4] B01D *33/06*

U.S. Cl. 210—404 **15 Claims**



1. In a rotary drum filter of the type having a vacuum breaker valve housing within one end of the drum and stationary drum support means at the same end of the drum, a vacuum breaker valve-discharge assembly comprising:

a stationary valve member, including a valve closure segment at an inlet end thereof for insertion in the valve housing of the drum and a valve discharge end including valve connecting means,

a discharge elbow defining a flow passage therethrough and including elbow inlet and outlet ends, said elbow inlet end including elbow connecting means,

a valve mounting means positioned between said valve connecting means and said elbow connecting means, said valve mounting means including first connecting means for connecting said mounting means to the drum support means, second connecting means independent of said first connecting means for connecting said mounting means to the valve connecting means, and third connecting means independent of said first and second connecting means for connecting the mounting means to the elbow connecting means, whereby said elbow and said valve member are indepently mounted to said mounting means and supported by said mounting means from said drum support means.

4,608,172

PLASMAPHERESIS MEMBRANE AND PROCESS FOR THE PREPARATION THEREOF

Hermann J. Goehl, Zimmern-Bisingen, and Reinhold J. Buck, Alleshausen, both of Fed. Rep. of Germany, assignors to Gambro Dialysatoren KG, Fed. Rep. of Germany

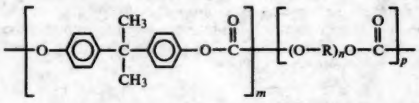
Continuation of Ser. No. 341,090, Jan. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 280,472, Jul. 6, 1981, abandoned. This application Nov. 6, 1984, Ser. No. 668,696

Claims priority, application Sweden, Jul. 25, 1980, 8005380-4

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—500.2 **10 Claims**

1. A plasmapheresis membrane of a biocompatible hydrophilic polycarbonate polymer comprising a polycondensate of bisphenol A and polyalkylene oxide having the following general formula:



wherein R is selected from the group consisting of $—CH_2C-H_2—$ and combinations of $—CH_2CH_2CH_2—$ and $—CH_2C-H_2—$, m is from 40 to 100, n is from 10 to 155, and p is from 0.5 to 3, said membrane having a symmetrical, microporous regular pore structure comprising smoothly rounded pore openings substantially free of sharp edges, substantially all of said pores of said membrane having an average pore diameter of between 0.01 and 0.8μ, said membrane being permeable by molecules of up to about 3×10^6 Dalton, and having a porosity of greater than 65%, whereby said membrane is capable of providing a high filtration rate for plasma while simultaneously rejecting blood cells without substantially decreasing its permeability capacity and without causing hemolysis when used in such plasmapheresis processes.

4,608,173

FILTER

Koh Watanabe, Tokyo; Michihide Tokashiki, Saitama, and Sadao Wada, Shiki, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 448,110, Dec. 9, 1982, abandoned. This application Jun. 7, 1985, Ser. No. 742,269

Claims priority, application Japan, Dec. 11, 1981, 56-198471

Int. Cl.[4] B01D *39/08, 39/16*

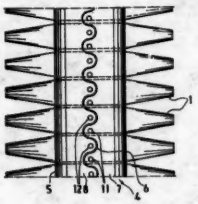
U.S. Cl. 210—502.1 **6 Claims**

1. A filter for removing carbonaceous particles from oil, gas, or air which comprises a fabric composed of (a) a plurality of nonwoven fibers having a composition selected from the group consisting of polymers and cotton, and having a diameter between about 0.5 and 10 micrometers, and being randomly entangled to provide a filter media, and (b) a cationic polyacrylamide coating on said fibers for adsorbing and filtering said particles in said oil, gas, or air.

4,608,174
FEED AND ACCEPT DUCT SYSTEM FOR HYDROCYCLONES

Seppo Kokkonen; Antti Kuhasalo, both of Savonlinna; Erkki Savolainen, Haapakallio; Juha Titoff, Savonlinna; Jorma Vento, Savonlinna, and Pentti Vikiö , Savonlinna, all of Finland, assignors to Enso-Gutzeit Oy, Helsinki, Finland

Filed Mar. 20, 1985, Ser. No. 714,096
Claims priority, application Finland, Mar. 20, 1984, 841123
Int. Cl.[4] B04C 3/04
U.S. Cl. 210—512.2 5 Claims

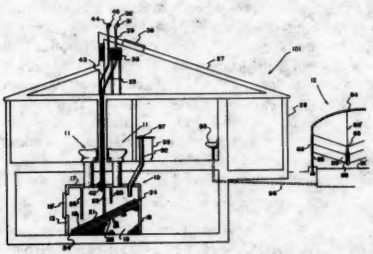


1. A feed and accept duct system for hydrocyclones, comprising a common feed duct, connected through connecting tubes to parallel hydrocyclones, and a common accept duct, to which said cyclones are similarly connected through connecting tubes, the connecting tubes of the feed and accept ducts leading to the different hydrocyclones being places so that the tubes are located substantially in parallel, and the feed and accept ducts being formed inside a common shell by dividing the space which it confines into two parallel ducts with a zigzag partition, and the ends of the connecting tubes being located at the folds produced by the bights of the partition, the partition thereby confining the feed duct connecting tubes to the feed duct side and the accept duct connecting tubes to the accept duct side.

4,608,175
INTEGRAL WASTE DISPOSAL SYSTEM

David A. Nuttle, Rte. 2, 137 White Oak Dr., Youngsville, N.C. 27596

Filed Jul. 6, 1984, Ser. No. 628,481
Int. Cl.[4] C02F 3/12, 9/00
U.S. Cl. 210—532.2 17 Claims

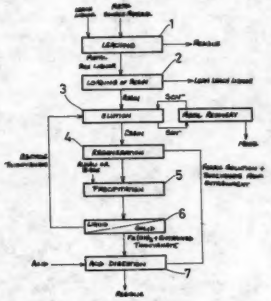


1. A system for disposal of household liquid and solid waste comprising: an aerobic biological decomposing tank for receiving and treating human and organic waste, said decomposing tank having waste inlet means for depositing said human and organic waste, aeration means including air inlet means, air exhaust means and blower means for causing a positive air flow through said decomposing tank, and access means for removal of ash resulting from the decomposition of said human and organic waste; and a solar evaporative distillation and collecting system for receiving and distilling waste water, said distillation system being independent of said decomposing tank and having at least one reservoir for receiving said waste water, a trough-like condensing surface having an extending lower apex over a substantial portion of said reservoir, and a water collection trough disposed below said apex of said condensing surface whereby a highly efficient, low cost system for disposal of household solid and liquid waste is provided.

4,608,176
REGENERATION OF THIOCYANATE RESINS

Christopher A. Fleming, Randburg, South Africa, assignor to Council for Mineral Technology, Johannesburg, South Africa

Filed Dec. 18, 1984, Ser. No. 683,131
Claims priority, application South Africa, Jan. 12, 1984, 84/0244
Int. Cl.[4] B01J 49/00
U.S. Cl. 210—677 12 Claims



1. A method of eluting and regenerating a strong-base anion exchange resin comprising the steps of:
(a) Eluting the resin using a thiocyanate strip solution,
(b) Contacting the stripped resin which carries adsorbed thiocyanate with a regenerating solution containing ferric ions and anions suitable for replacing thiocyanate anions in the resin, the ferric ion concentration being from about 0.035 to 2.0 Molar, separating the resin and thiocyanate containing regenerating solution, treating such solution with an alkali or base to precipitate iron, and separating the iron precipitate from the remaining thiocyanate solution.

11. A process for the recovery of selected metal values from a leach solution containing such metals in complex anionic form, the process comprising the steps of adsorbing the complex anions on a strong base anion exchange resin, eluting the metal values using a thiocyanate strip solution, regenerating the resin by a process as claimed in claim 1 and recycling the resin to the adsorption stage.

4,608,177
EFFLUENT PRECIPITATION AND NEUTRALIZATION CHAMBER

Gunter Woog, 5435 Bauers Dr., West Bend, Wis. 53095

Filed Jan. 7, 1985, Ser. No. 689,434
Int. Cl.[4] C02F 1/52, 1/66
U.S. Cl. 210—738 3 Claims

1. Apparatus for treating fluids prior to discharge thereof to a drain comprising:
a. a container having an opening;
b. cover means for removably covering and sealing the container opening;
c. inlet means in the cover means for conducting at least two different fluids into the container;
d. outlet means in the cover means for discharging the fluids from the container, mixing means fastened to the inside of the cover means for preliminarily mixing the fluids as they

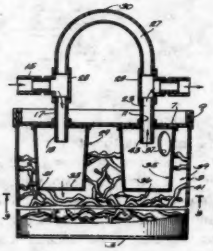
enter the container, the mixing means comprising a hollow vessel having wall means for surrounding the streams of fluid entering the container from the inlet means and for defining an opening therethrough to permit the partially mixed incoming fluids to pass from the hollow vessel to the inside of the container;

e. restrictor means within the container for providing tortuous paths to the flow of the fluids to promote intermixing thereof, the restrictor means comprising at least one long length of flexible ribbon folded and packed within the container;

f. outlet means in the cover means for discharging the fluids from the container; and

g. a hollow cylinder fastened to the inside of the cover means and having wall means for surrounding the outlet means, the wall means defining at least one port therethrough located near the cover means and remote from the inlet means to permit only fluid from the top of the container to be discharged through the outlet means,

so that the fluids introduced into the container are intermixed therein as they flow from the inlet means to the outlet means.



3. A method of treating spent photographic alkaline developer and acidic fixer that has been desilvered by exchanging silver dissolved therein with iron comprising the steps of:

a. providing a chamber having at least two inlet conduits, at least one outlet conduit, an effective length of foldable flexible ribbon, a first hollow vessel having an opening therethrough and surrounding the inlet conduits, and a second hollow vessel defining at least one port therethrough and surrounding the outlet conduit;

b. separately introducing the developer and fixer into the chamber by means of the inlet conduits;

c. intermixing the developer and fixer within the chamber by flowing said developer and fixer through said first hollow vessel and along a tortuous path provided by said ribbon to cause metallic iron particles to precipitate out of the fixer;

d. allowing the precipitated metallic particles to settle out of the fluid; and

e. discharging clear mixed fluids from the chamber through said second hollow vessel,

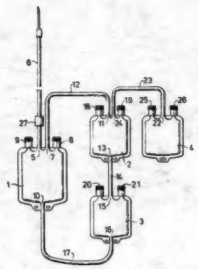
so that the developer and fixer are neutralized and the metallic particles are accumulated within the chamber prior to discharging the mixed developer and fixer into a drain.

4,608,178

METHOD OF SEPARATING BLOOD COMPONENTS

Anne S. Johansson, Vråkvägen 7A, S-752 52 Uppsala, and Claes F. Högman, Statarvägen 14, S-752 45 Uppsala, both of Sweden

Continuation of Ser. No. 423,244, Sep. 24, 1982, abandoned, which is a continuation of Ser. No. 133,868, Mar. 25, 1980, abandoned. This application Dec. 19, 1984, Ser. No. 683,566
Claims priority, application Sweden, Mar. 28, 1979, 7902761
Int. Cl.[4] B01D *21/26*
U.S. Cl. 210—744 **8 Claims**



1. A method of separating blood components contained in a blood sample, comprising the steps of:

(a) providing a primary blood bag for receiving the blood sample;

(b) providing at least two transfer blood bags and at least two conduits, a first of said at least two conduits connecting said primary bag with a first of said at least two transfer blood bags and a second of said at least two conduits connecting said primary bag with a second of said at least two transfer blood bags;

(c) collecting a blood sample in the primary blood bag having at least one top portion outlet connecting with the first of said at least two conduits and at least one bottom portion outlet connecting with the second of said at least two conduits;

(d) centrifugating said primary blood bag and said transfer blood bags for separating said blood sample into an upper layer containing blood plasma, a lower layer containing red blood cells, and an intermediate layer containing white blood cells; and

(e) squeezing said primary bag while said intermediate layer is in fluid contact with each of said upper and lower layers in said primary bag to thereby cause said upper layer to transfer from said primary bag through said at least one top portion outlet and the first of said at least two conduits to said first transfer bag and said lower layer to transfer from said primary bag through said at least one bottom portion outlet and the second of said at least two conduits to said second transfer bag so as to leave essentially only said intermediate layer in said primary blood bag.

4,608,179

CONTINUOUS PROCESS FOR THE DEWATERING OF PHOSPHATE SLIMES

Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

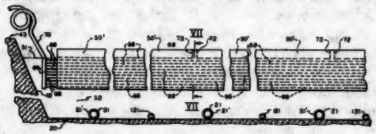
Continuation of Ser. No. 543,346, Oct. 19, 1983, abandoned. This application May 16, 1985, Ser. No. 734,487
Int. Cl.[4] B01D *13/02*
U.S. Cl. 210—748 **11 Claims**

1. In a closed loop system of dewatering fresh plant slimes produced during the processing of phosphate rock and the like to a solids content forming a stable landfill when mixed with sand tailings from the plant and the like wherein the processing plant receives phosphate rock from a mining cut, a method of balancing the rate of dewatering such slimes with the slimes

producing capacity of the plant comprising the following steps:

(a) directing the fresh slimes from the plant sequentially into two or more impoundments wherein natural dewatering of the slimes takes place,

(b) improving the rate of dewatering in said impoundments by electrokinetics to effect said balancing,



(c) removing the supernatant formed by dewatering,

(d) sequentially removing the dewatered slimes from said impoundments when a predetermined solids content has been obtained and mixing the removed dewatered slimes with sand tailings from the plant to form a mixture, and

(e) introducing said mixture into a mining cut to form a stable landfill.

4,608,180

SEPARATION PROCESS

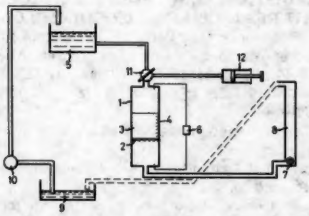
Colin G. Caro, Putney, England, assignor to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 575,764, Feb. 1, 1984, abandoned. This application Jun. 18, 1985, Ser. No. 745,827

Claims priority, application United Kingdom, Feb. 3, 1983, 8302949

Int. Cl.[4] B01D *33/00*

U.S. Cl. 210—780 **17 Claims**



1. A process for separating suspended material from a fluid comprising

(i) steadily flowing a fluid containing suspended material through a porous matrix closely fitting within a flow line, the porous matrix being restrained at either the fluid inlet or the fluid outlet face

(ii) the porous matrix being fabricated from a material capable of elastic deformation and containing material which is chemically reactive with the suspended material

(iii) the fluid flow rate being sufficiently large so as to produce substantial non-uniform drag-induced deformation of the porous matrix, the deformation thereby creating a gradient of porosity in the porous matrix in the direction of fluid flow and

(iv) the gradient of porosity enabling the separation of at least a part of the suspended material within the porous matrix.

4,608,181

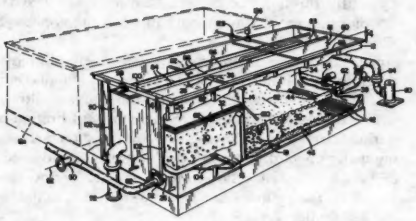
WATER FILTRATION APPARATUS HAVING UPFLOW BUOYANT MEDIA FILTER AND DOWNFLOW NONBUOYANT MEDIA FILTER

Andrew K. Hsiung; George F. Eaton, and Brian W. Hemphill, all of Corvallis, Oreg., assignors to Neptune Microfloc, Inc., Corvallis, Oreg.

Continuation of Ser. No. 478,991, Mar. 25, 1983, abandoned. This application May 8, 1985, Ser. No. 732,892

Int. Cl.[4] B01D *23/10*

U.S. Cl. 210—786 **24 Claims**



1. A filter apparatus comprising:

a hollow elongated upright tank;

an internal upright wall separating the interior of the tank into an upflow filter vessel and a downflow filter vessel,

said upflow filter vessel having an upflow filter inlet, an upflow filter outlet located above the upflow filter inlet, and defining an upflow passageway for liquid from the upflow inlet to the upflow outlet;

an amount of buoyant particulate filter media in the upflow filter vessel sufficient to form a buoyant filtration bed in the upflow passageway between the upflow inlet and upflow outlet,

said downflow filter vessel having a downflow filter inlet coupled to said upflow filter outlet, a downflow filter outlet located below the downflow filter inlet, and defining a downflow passageway for liquid from the downflow inlet to the downflow outlet;

an amount of nonbuoyant particulate filter media in the downflow filter vessel sufficient to form a nonbuoyant filtration bed in the downflow passageway between the downflow inlet and outlet,

said upflow filter vessel having an upflow filter vessel waste outlet at a first elevation which is above the elevation of the upflow filter outlet,

said downflow filter vessel having a downflow filter vessel waste outlet at a second elevation which is above the elevation of the upflow filter vessel waste outlet; and

drain means coupled to said upflow and downflow filter vessel waste outlets,

said drain means comprising a waste trough having upright first and second side walls and a base, said waste trough extending lengthwise within an upper region of said tank so as to position at least a portion of said trough within the upflow filter vessel and at least a portion of said trough within the downflow filter vessel, at least a portion of one of said side walls comprising a first spill over wall and being positioned within the upflow filter vessel at the first elevation so as to comprise the upflow filter vessel waste outlet, at least a portion of one of said side walls comprising a second spill over wall and being positioned within the downflow filter vessel at the second elevation so as to comprise the downflow filter vessel waste outlet.

23. A method of filtration of water comprising:

providing an upflow filter vessel that has

a. an upflow filter outlet, and

b. an upflow filter vessel distribution outlet at an elevation which is above the elevation of the upflow filter outlet;

forming a buoyant filtration bed by positioning an amount of buoyant particulate filter media in the upflow filter vessel;

providing a downflow filter vessel that has

a. a downflow filter inlet coupled to the upflow filter outlet,

b. a downflow filter outlet, and

c. a downflow vessel distribution outlet;

forming a nonbuoyant filtration bed by positioning an amount of nonbuoyant particulate filter media in the downflow filter vessel;

providing a distribution vessel which communicates with the distribution outlets;

cleaning an influent stream of water by flowing the water upwardly through the buoyant filtration bed and then flowing the water downwardly through the nonbuoyant filtration bed;

cleaning the upflow filter vessel by selectively closing the downflow filter outlet to maintain the level of liquid in the downflow filter vessel, expanding the buoyant filtration bed to release solids trapped in the buoyant filtration bed during filtration, and flowing buoyant filtration bed cleaning water upwardly through the buoyant filtration bed to carry the released solids away from the upflow filter vessel via the upflow filter vessel distribution outlet, and the distribution vessel;

cleaning the downflow filter vessel by selectively expanding the nonbuoyant filtration bed to release solids trapped in the nonbuoyant filtration bed during filtration, and flowing nonbuoyant filtration bed cleaning water upwardly through the nonbuoyant filtration bed to carry the released solids away from the downflow filter vessel via the downflow filter vessel distribution outlet, and the distribution vessel.

4,608,182

VINYL SULFONATE AMIDE COPOLYMER AND TERPOLYMER COMBINATIONS FOR CONTROL OF FILTRATION IN WATER-BASED DRILLING FLUIDS AT HIGH TEMPERATURE

Joseph J. Dickert, Jr., Yardley, Pa., and Israel J. Heilweil, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

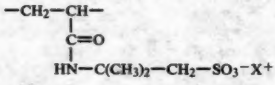
Filed Jan. 9, 1985, Ser. No. 690,066

Int. Cl.[4] C09K *7/02*

U.S. Cl. 252—8.512 **2 Claims**

1. A water-based clay drilling fluid containing from 0.25 lbs./bbl. to 6 lbs./bbl. of (A) a water-soluble first polymer consisting of a vinyl sulfonate amide terpolymer having a molecular weight of about 1 million to 2 million and consisting of a random distribution of units of the formulae

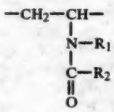
(a)



in a proportion of 35 wt. % to 70 wt. % of the weight of the terpolymer,

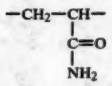
(b)

(a)



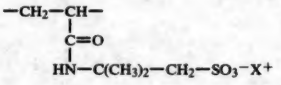
in a proportion of 15 wt. % to 35 wt. % of the weight of the terpolymer, and

(c)



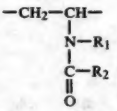
in a proportion of 10 wt. % to 30 wt. % of the weight of the terpolymer, wherein R_1 and R_2 are the same or different and each is hydrogen, methyl, or ethyl, and X^+ is a cation, and (B) from 0.25 lbs./bbl. to 6 lbs./bbl. of a water-soluble second polymer consisting of a vinyl sulfonate amide copolymer having a molecular weight of about 1 million to 2 million and consisting of a random distribution of units of the formulae

(a)



in a proportion of 60 wt. % to 80 wt. % of the weight of the copolymer, and

(b)



in a proportion of 20 wt. % to 40 wt. % of the weight of the copolymer, wherein R_1 and R_2 are the same or different and each is hydrogen, methyl, or ethyl and X^+ is a cation and wherein the weight ratio of said terpolymer to said copolymer is about 1:3.

4,608,183

SYNERGISTIC ANTIMICROBIAL OR BIOCIDAL MIXTURES INCLUDING ISOTHIAZOLONES

Harold W. Rossmoore, Oak Park, Mich., assignor to Board of Governors of Wayne State University, Detroit, Mich.

Filed Jan. 14, 1985, Ser. No. 691,431

Int. Cl.[4] C10M *159/18*

U.S. Cl. 252—36 **23 Claims**

1. A concentrated composition which comprises in admixture:

(a) a heavy metal complex of a polyfunctional organic ligand(A); and

(b) an isothiazolone or isothiazolones (B), wherein the isothiazolone(s) (B) is present in an amount with the metal complex (A) which is less than is required for biocidal activity alone in a fluid which supports microbial growth, wherein the metal complex provides a metal ion in the fluid which is toxic to microbial growth with the isothiazolone(s) and wherein between 1.5 and 500 ppm of metal ion is provided in the fluid from the metal complex and wherein the microbial growth in the fluid is suppressed for over 50 hours in the presence of ferric ion.

4,608,184

PHENATE PROCESS AND COMPOSITION IMPROVEMENT

Yuehsiung Chang, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Jul. 12, 1985, Ser. No. 754,647

Int. Cl.[4] C10M *125/22, 141/02*

U.S. Cl. 252—42.7 **15 Claims**

1. A process for making a lubricating oil additive composi-

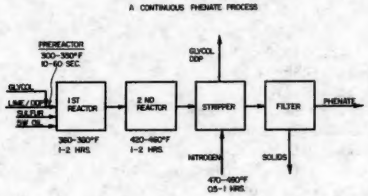
tion with improved dispersant and anti-oxidant capabilities which comprises:

(a) reacting a polyhydroxy compound with an alkaline earth metal compound in the presence of an alkylphenol at a temperature within the range of from about 300° F. to about 350° F. for a period of from 10 seconds to 60 seconds,

(b) adding elemental sulfur to the reaction mixture of (a),

(c) heating the reaction mixture of (b) at a temperature within the range of from about 360° F. to about 380° F. for a period of from about 1 to about 2 hours,

(d) heating the reaction mixture of (c) at a temperature



within the range of from about 420° F. to about 460° F. for a period of from about 1 to about 2 hours,

(e) nitrogen-stripping the reaction product of (d) at a temperature within the range of from about 470° F. to about 490° F.,

(f) filtering the nitrogen-stripped product of (e) whereby said finished product has an infrared absorbance ratio of less than 0.2 for A1660 cm^{-1}/A1600 cm^{-1} and also for A1080 cm^{-1}/A835 cm^{-1}.

2. The lubricating oil additive composition prepared by the process of claim 1 wherein infrared absorbance ratio of A1660 cm^{-1}/A1600 cm^{-1} is less than 0.2 and absorbance ratio of 1080 cm^{-1}/A835 cm^{-1} is also less than 0.2.

4,608,185

MODIFIED SUCCINIMIDES (VI)

Thomas F. Buckley, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 722,911, Apr. 12, 1985, abandoned. This application Dec. 31, 1985, Ser. No. 815,431

Int. Cl.⁴ C10M *133/16*

U.S. Cl. 252—51.5 A **28 Claims**

1. A polyamino alkenyl or alkyl succinimide wherein one or more of the nitrogens of the polyamino moiety is substituted with

wherein R_4 is selected from the group consisting of hydrocarbyl of from 1 to 30 carbon atoms, $—R_5(OH)_t$ wherein R_5 is hydrocarbyl of from 2 to 20 carbon atoms and t is an integer from 1 to 6 with the proviso that there is no hydroxy substitution on the hydrocarbyl carbon atom attaching the $—R_5(OH)_t$ group to the oxy atom of the

moiety and with the further proviso than when t is greater than one, the hydroxy groups are not attached to the same carbon atom and the number of carbon atoms in the R_5 group is minimally equal to t+1, and $—(R_7O)_sH$ wherein R_7 is alkylene of from 2 to 5 carbon atoms and s is an integer from 2 to 100.

4,608,186

MAGNETIC FLUID

Katsuhiko Wakayama, and Hiraku Harada, both of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 30, 1985, Ser. No. 760,469

Claims priority, application Japan, Jul. 30, 1984, 59-159930; Sep. 18, 1984, 59-194985

Int. Cl.⁴ C09K *5/00*

U.S. Cl. 252—62.52 **15 Claims**

1. A magnetic fluid comprising metal fine particles of cobalt, a surface-active agent, and a hydrocarbon medium,

the improvement wherein said surface-active agent is at least one member selected from the group consisting of polyglycerine fatty acid esters, sorbitan fatty acid esters, and mixtures thereof.

4,608,187

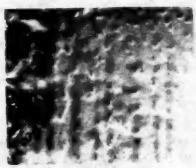
RUBBER TOUGHENED POLYVINYL ALCOHOL FILM COMPOSITIONS

Daniel M. Chang, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Apr. 2, 1984, Ser. No. 595,980

Int. Cl.⁴ C11D *17/00*

U.S. Cl. 252—90 **19 Claims**



1. A sealed envelope comprising:

a self-supporting film, formed by a polymeric matrix comprising at least about 50 wt. % polyvinyl alcohol, and containing a plurality of microdomains dispersed therethroughout, the plurality of microdomains consisting essentially of a rubbery material which is at least partially incompatible with the polyvinyl alcohol and has a glass transition temperature of less than about 0° C., the microdomains being at least about 3 wt. % of the film.

4,608,188

DISHWASHING COMPOSITION

Edward J. Parker, Woodhaven, and Kenneth C. Scott, Grosse Ile, both of Mich., assignors to BASF Corporation, Wyandotte, Mich.

Filed Apr. 12, 1985, Ser. No. 722,457

Int. Cl.⁴ C11D *3/075, 3/395*

U.S. Cl. 252—99 **18 Claims**

1. A low phosphate machine dishwashing composition consisting essentially of:

(A) about 7 to 8 percent of a maleic acid-acrylic acid copolymer having an average molecular weight of about 10,000 to 70,000 and a maleic acid-acrylic acid monomer ratio of about 1:2 to 1:4 by weight,

(B) about 10 to 20 percent by weight of an alkaline condensed phosphate salt,

(C) about 2 to 4 percent by weight of a blend of nonionic surfactants consisting of:

(1) a nonionic surfactant having the formula:

$$Y[(EO)_m(A)_nH]_2$$

wherein EO represents oxyethylene groups which are present in the surfactant in the proportion of about 5 to about 60 percent by weight; Y represents the nucleus of an active hydrogen-containing organic compound having

about 2 to about 6 carbon atoms and 2 reactive hydrogen atoms; A represents a lower oxyalkylene selected from the group consisting of oxypropylene, oxybutylene, oxytetramethylene and mixtures thereof; m and n are integers individually selected such that the average total molecular weight of the polymer is about 500 to about 25,000 and

(2) a nonionic surfactant having the formula:

$$Y[(EO)_m(A)_nH]_3$$

wherein Y represents the nucleus of an active hydrogen-containing organic compound having about 2 to 6 aliphatic carbon atoms and 3 reactive hydrogen atoms, EO, A, m, n, molecular weight and percent oxyethylene groups are as defined above;

(D) about 20 to 40 percent of an alkaline carbonate compound the balance conventional machine dishwashing composition additives in normal amounts.

4,608,189

DETERGENTS AND LIQUID CLEANERS FREE OF INORGANIC BUILDERS

Karlheinz Koch, Haan; Ingo Wegener, and Brigitte Giesen, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 512,514, Jul. 11, 1983, abandoned. This application May 8, 1985, Ser. No. 731,760

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232616

Int. Cl.[4] C11D *3/075, 9/00, 1/66, 9/22*

U.S. Cl. 252—174.22 **10 Claims**

1. A homogeneous aqueous liquid laundering and cleaning detergent composition, essentially free from inorganic builder salt consisting essentially of:

(a) from about 20 to about 40 wt. % of a mixture of nonionic surfactants of the formula:

$$RO—[CH_2—CH(CH_3)—O]_m—(CH_2—CH_2—O)_n—H \quad (I)$$

wherein R is a C_{10}–C_{20} aliphatic hydrocarbon group which is linear or methylated in the 2-position and can be saturated or unsaturated, or R represents a mixture of such groups; m is a number from 1 to 5; n is a number from 3 to 20; n>m; and wherein the mixture of nonionic surfactants is composed of the following components:

(i) from about 5 to about 9 parts by weight of at least one compound of the above Formula I wherein n=3 to 9,

(ii) from about 1 to about 5 parts by weight of at least one compound of the above Formula I wherein n=10 to 20, and

(iii) from 0 to about 6 parts by weight of a compound of the above Formula I wherein m=1 to 3 and n=9 to 11;

(b) from about 2 to about 25 wt. % based on fatty acid of at least one sodium, potassium monoalkanolamine, dialkanolamine or trialkanolamine soap of a C_{10}–C_{20} saturated or monounsaturated fatty acid;

(c) from about 0.001 to about 2 wt. % of at least one proteolytic enzyme; and

(d) from about 5 to about 25 wt. % of at least one monohydroxy or polyhydroxy alcohol having 2 to 4 carbon atoms;

wherein (a) and (b) taken together constitute from about 30 to about 50 wt. % of the detergent composition, and wherein a 1% aqueous solution of the detergent composition has a pH value in the range of from about 6.5 to about 9.

4,608,190

X-RAY IMAGE STORAGE PANEL COMPRISING ANION-DEFICIENT BAFCL:EU/BAFBR:EU PHOSPHORS

Lothar H. Brixner, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 603,288, Apr. 23, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 786,102

Int. Cl.[4] C09K *11/465*

U.S. Cl. 252—301.4 H **11 Claims**

1. Photostimulable, potassium-containing anion-deficient phosphor of the formula

$$Ba_{1-(a+b+c)}K_{(a+c)}Eu_bF_{1-a}X_{1-c}\phi_{(a+c)}$$

where

X=at least one of Cl and Br,

ϕ=anion deficiencies,

a=0 to about 0.05,

c=0 to about 0.05,

a+c=0.0005 to about 0.05, and

b=about 0.001 to about 0.02 exhibiting a photostimulable emission (A) of greater than 0.50 and a LAG to PEAK ratio of less than 0.005.

4,608,191

COMPOSITION AND METHOD FOR CORROSION INHIBITION

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1984, Ser. No. 655,797

Int. Cl.[4] C23F *11/16*

U.S. Cl. 252—391 **13 Claims**

1. A composition which forms a corrosion-inhibiting film when applied to a metal surface, the composition comprising the reaction product of:

(a) a first component selected from the groups consisting of

(1) a substrate bearing a vicinal epoxide group, and

(2) a substrate having at least one displaceable halogen; and

(b) a second component comprising a monomercaptan containing 2 to 8 carbon atoms and present in an amount such that the equivalent ratio of said first component to said second component is within the range of about 0.5 to about 11.0, wherein the reaction product of the first and second component is a beta hydroxy thioether or a beta alkoxy thioether; and

(c) a quaternary ammonium salt selected from the group consisting of a quaternized polyethoxylated amines and salts represented by the general formula:

$$(R_1)(R_2)(R_3)R_4)N^+X^-,$$

wherein R_1, R_2, R_3 and R_4 are individually selected from the group consisting of alkyl, alkenyl and aralkyl groups containing individually 1 to 18 carbon atoms such that the total number of carbon atoms does not exceed 40 and at least one of the groups contains at least 7 carbon atoms, and wherein X^- is selected from the group consisting of chloride, bromide, iodide, acetate, hydrogen sulfate, dihydrogen phosphate and alkenyl succinate;

(d) a hydrocarbon diluent; and

(e) methanol.

4,608,192

GRAPHITE INTERCALATES CONTAINING METAL-CHARGE TRANSFER SALTS

Sophia R. Su, Weston, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 16, 1984, Ser. No. 570,900
Int. Cl.[4] H01B 1/06
U.S. Cl. 252—506 **6 Claims**

1. An intercalated graphite material in which the intercalant has the formula:

$$M^+R^-$$

wherein:

M^+ is selected from the group consisting of:
(a) cations of alkali metals;
(b) cuprous chloride (CuCl); and
(c) cupric chloride $CuCl_2$ and

R^- is an anion radical group of an organic acid selected from the group consisting of:
(a) 7,7,8,8-Tetracyanoquinomethane;
(b) Tetracyanoethylene;
(c) Tetrachloroethylene;
(d) 1,2,4,5 Tetracyanobenzene;
(e) Diphenylacetylene;
(f) 1,2 Dicyanobenzene; and
(g) 1,4 Dicyanobenzene.

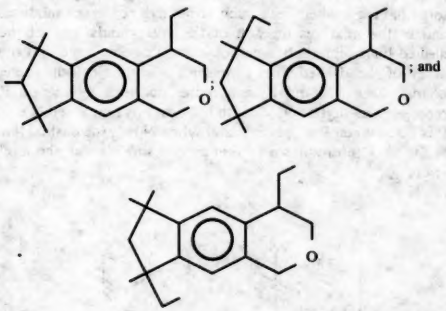
4,608,193

ISOCHROMAN DERIVATIVES AND ORGANOLEPTIC USES THEREOF

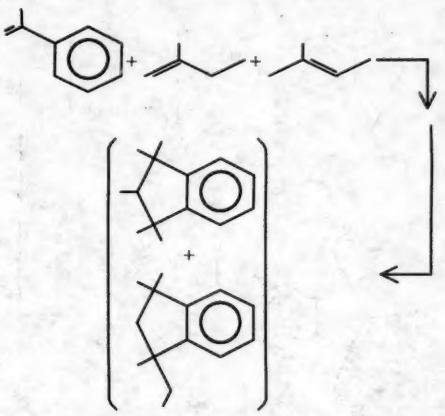
Mark A. Sprecker, Sea Bright; Wilhelmus J. Wiegers, Red Bank; Roger Greene, Oakhurst; Domenick Luccarelli, Jr., Neptune, and Marie Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 551,552, Nov. 14, 1983, which is a division of Ser. No. 430,951, Sep. 30, 1982, abandoned. This application Aug. 13, 1985, Ser. No. 765,212
Int. Cl.[4] A61K 7/46
U.S. Cl. 252—522 R **2 Claims**

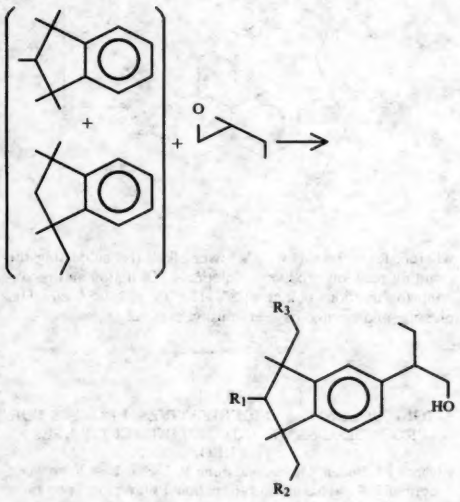
1. A process for augmenting or enhancing the aroma of a perfume composition, cologne or perfumed article comprising the step of adding to a perfume composition, cologne or perfumed article base an aroma augmenting or enhancing quantity of a product consisting essentially of compounds having the structures:



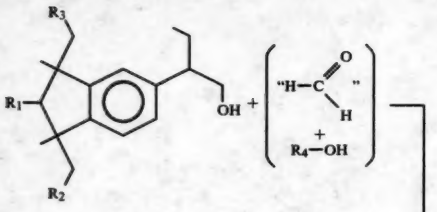
produced according to the process comprising the step of (i) reacting isoamylene with alphamethyl styrene according to the reaction:

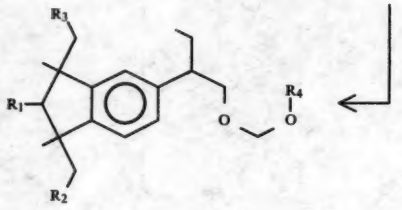


in the presence of a heterogeneous solid catalyst selected from the group consisting of acid clays and acid ion exchange resins, the mole ratio of isoamylene to alpha methyl styrene being 1:1 and 2:1; the ratio of catalyst to reactants being from 0.1% up to 8% of the total weight of alpha methyl styrene and isoamylene; the reaction temperature being between 75° C. and 250° C.; the reaction pressure being between 50 psig and 300 psig; (ii) reacting the resulting product with 1,2-butylene epoxide in the presence of a catalyst to produce a mixture consisting essentially of indane alkanols according to the reaction:

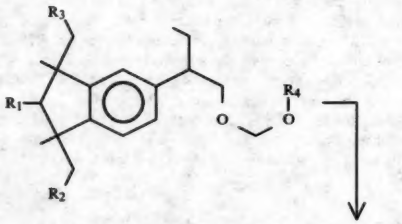


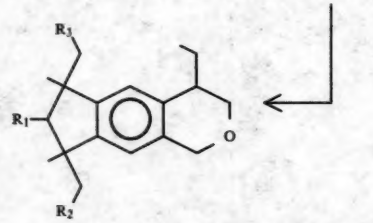
wherein in the resulting mixture one of R_1, R_2 and R_3 represents methyl and the other of R_1, R_2 and R_3 represent hydrogen; and (iii) reacting the resulting mixture consisting essentially of indane alkanols with formaldehyde or a formaldehyde source in the presence of a lower alkanol according to the reactions:





and





wherein R_4 represents C_1–C_6 lower alkyl; (iv) subjecting the resulting reaction product to fractional distillation and recovering the fractions boiling at 85°–130° C. at 3.0–5.0 mm/Hg. pressure and having a sweet, musky, caramel aroma.

4,608,194

OXOBICYCLONONANE DERIVATIVES, PROCESS FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

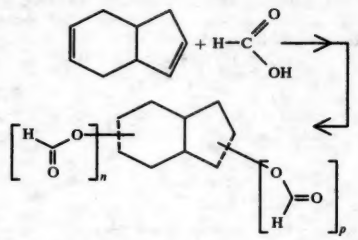
Richard M. Boden, Ocean, and John R. Helm, East Keansburg, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 8, 1985, Ser. No. 763,569

Int. Cl.[4] A61K 7/46

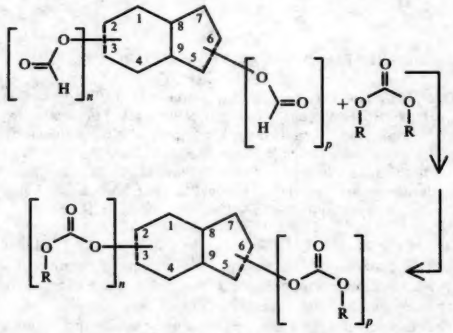
U.S. Cl. 252—522 R **13 Claims**

1. A product produced according to the process of reacting formic acid with bicyclononadiene to form a bicyclononenyl formate-containing mixture according to the reaction:

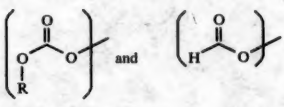


and then reacting the resulting bicyclononenyl formate-containing mixture with a dialkyl carbonate defined according to the structure:

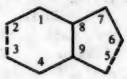
according to the reaction:



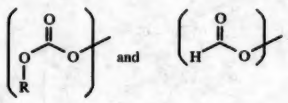
in the presence of an alkali metal alkoxide or aluminum isopropoxide catalyst at a temperature in the range of from 50° C. up to 90° C. wherein (a) in the compounds indicated by the structures having dashed lines such structures represent mixtures and in the mixtures in each of the compounds, one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represents a carbon-carbon single bond; wherein N and P each represents 0 or 1; wherein R represents methyl or ethyl; with the provisos that when N is 0, P is 1 and when P is 0, N is 1; and when N is 1, the dashed line at the "2-3" position is a carbon-carbon single bond, the moieties:



are bonded to the moiety:



at the "2" or "3" position and the dashed line at the "5-6" position is a carbon-carbon double bond; and when P is 1, the dashed line at the "5-6" position is a carbon-carbon single bond, the moieties:



are bonded to the moiety:

at the "5" or "6" position and the dashed line at the "2-3" position is a carbon-carbon double bond; (b) the mole ratio of formic acid:bicyclononadiene is from about 2:1 up to about 7:1; and (c) the mole ratio of dialkyl carbonate:bicyclononenyl formate is from about 2:1 up to about 4:1.

3. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of the product defined according to claim 1.

4,608,195

PREPARING A TERTIARY HYDROXYL CARBOXALDEHYDE CONTAINING PERFUME COMPOSITION

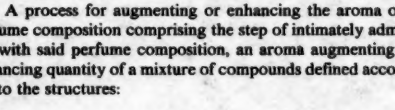
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 656,660, Oct. 1, 1984, Pat. No. 4,576,739, which is a division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Aug. 23, 1985, Ser. No. 768,839

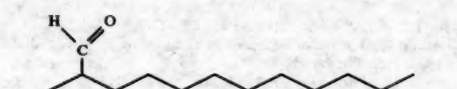
Int. Cl.[4] A61K *7/46*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of intimately admixing with said perfume composition, an aroma augmenting or enhancing quantity of a mixture of compounds defined according to the structures:



and



4,608,196

PREPARING TERTIARY HYDROXYL CARBOXALDEHYDE CONTAINING PERFUME COMPOSITIONS

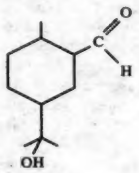
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 656,660, Oct. 1, 1984, Pat. No. 4,576,739, which is a division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Aug. 23, 1985, Ser. No. 768,840

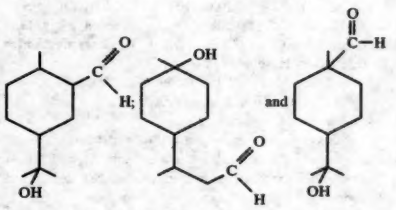
Int. Cl.[4] A61K *7/46*

U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of intimately admixing with said perfume composition, an aroma augmenting or enhancing quantity of the compound having the structure:



2. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of intimately admixing with said perfume composition, an aroma augmenting or enhancing quantity of a mixture of compounds having the structures:



4,608,197

ALKOXYLATED ETHER SULFATE ANIONIC SURFACTANTS FROM BRANCHED CHAIN PLASTICIZER ALCOHOLS

Haven S. Kesling, Jr., Drexel Hill, and Hyman D. Gillman, Spring City, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 25, 1984, Ser. No. 624,323

Int. Cl.[4] C11D *1/14*; C07C *141/02*

U.S. Cl. 252—551 **14 Claims**

1. A water-soluble, liquid alkoxylated ether sulfate anionic surfactant having the formula:

$$RO[CH_2CH(R')O]_mZ_nSO_3M-$$

wherein R is a branched chain hydrocarbon alkyl radical containing of from about 4 to 11 carbon atoms; R' is a member selected from the group consisting of methyl and ethyl; m is an integer of from 6 to 12; Z is an oxyethylene group or a random mixture of oxyethylene groups and oxyalkylene groups present in the radical $-CH_2CH(R')O-$, the molar ratio of oxyethylene to oxyalkylene groups in said mixture being such that the total molar ratio of oxyethylene to oxyalkylene groups in said formula is from about 1:1 to 1:10; n is an integer of from 0 to 4; and M is hydrogen, an alkali metal, an alkaline earth metal;

ammonium or a primary, secondary, tertiary or quaternary alkyl ammonium or alkyolammonium ion.

4,608,198

FLAME RETARDANT FOR HALOGEN-CONTAINING VINYL RESINS

Yoshitane Watanabe, Tokyo; Keitaro Suzuki, Narashino, and Susumu Suda, Higashimatsuyama, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 647,038

Claims priority, application Japan, Sep. 10, 1983, 58-167335; Sep. 10, 1983, 58-167336

Int. Cl.[4] C09K *21/04*

U.S. Cl. 252—609 **12 Claims**

1. A dried flame retardant composition in powder form, said powder having a particle size of 0.2 to 10 microns, comprising, relative to 100 parts by weight of Sb_2O_5,

(A) 3 to 20 parts by weight of an alkali metal in terms of M_2O in which M represents an alkali metal atom;

(B) 1 to 25 parts by weight of an alkaline earth metal in terms of M'O in which M' represents an alkaline earth metal atom; and

(C) 0.4 to 3 parts be weight of a compound selected from phosphoric acid, an ammonium salt of phosphoric acid and an alkali metal salt of phosphoric acid in terms of P_2O_5.

4,608,199

BONE PROTEIN PURIFICATION PROCESS

Arnold Caplan, 1300 Oakridge Dr., Cleveland Heights, Ohio 44121, and Glenn T. Syftestad, 3660 Warrensville Center Rd. - #101, Shaker Heights, Ohio 44122

Filed Mar. 20, 1984, Ser. No. 591,505

Int. Cl.[4] C07K *15/06, 15/20, 3/20, 3/28*

U.S. Cl. 530—414 **5 Claims**

1. A process of purifying bone matrix proteins to obtain a cold-water-soluble 30 to 32k dalton protein capable of stimulating cartilage formation in mesenchymal-like cells comprising the steps of:

(a) preparing a guanadinium chloride extract of demineralized, defatted bone;

(b) dialyzing the guanidinium chloride soluble extract against decreasing ionic strength buffers down to water until it is substantially salt-free;

(c) separating the cold-water-soluble proteins from the cold-water-insoluble proteins present in the retentate;

(d) adsorbing the cold-water-soluble proteins in the retentate with an anionic exchanger at about pH 8.0 and desorbing by eluting with a substantially linear salt gradient;

(e) assaying fractions eluted by the salt gradient in undifferentiated mesenchymal-like cell cultures to identify fractions having the greatest chondrogenic activity;

(f) passing only those identified fractions having the greatest chondrogenic activity over a molecular sieve column;

(g) assaying fractions passed over the molecular sieve in undifferentiated mesenchymal-like cells to identify fractions having the greatest chondrogenic activity;

(h) repeating steps (f) and (g);

(i) passing only those identified protein fractions having the greatest chondrogenic activity over concanavalin—A coupled gel;

(j) collecting the unbound protein from step (i) in one fraction; and

(k) passing the unbound protein from step (j) over a molecular sieve column to isolate a single 30 to 32k dalton protein.

4,608,200

CHLORAMPHENICOL DERIVATIVES, ANTIGENS AND ANTIBODIES

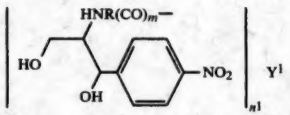
Pyare L. Khanna, San Jose; Evan S. Snyder, Mountain View, and Prithipal Singh, Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 306,569, Sep. 28, 1981, Pat. No. 4,489,157. This application Nov. 30, 1984, Ser. No. 676,379

Int. Cl.[4] A61K *31/04, 39/00;* C07C *79/46;* G01N *33/531*

U.S. Cl. 530—387 **4 Claims**

1. Antibodies prepared in response to an antigen of the formula:



wherein:

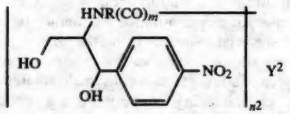
m is 0 or 1

R is a saturated aliphatic linking group of from 2 to 6 carbon atoms having from 0 to 1 oxo-carbonyl group at its terminus bonded to nitrogen;

Y^1 is a poly(amino acid); and

n^1 is a number from one to the molecular weight of Y^1 divided by 2000.

3. A compound of the formula:



wherein:

R is a saturated aliphatic linking group of from 2 to 8 carbon atoms wherein the atom at the terminus bonded to nitrogen is saturated;

Y^2 is hydrogen, hydroxyl, alkoxyl from 1 to 6 carbon atoms, or a group forming an acitvated ester cable of amide formation in an aqueous medium;

m is 1; and

n^2 is 1.

4,608,201

PROCESS FOR PREPARING LACTAM IMIDES

Gregory J. McCollum, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 21, 1984, Ser. No. 612,213

Int. Cl.[4] C07D *201/02, 201/08*

U.S. Cl. 540—529 **10 Claims**

1. A process for preparing a lactam imide with comprises reacting together a lactam, a non-volatile carboxyl group-containing material, and an anhydride of a volatile carboxylic acid, with the proviso that an appreciable amount of non-volatile carboxyl group-containing material and volatile carboxylic acid which is generated as the anhydride reacts are both present in the reaction mixture at the same time.

4,608,202

PROCESS FOR THE PRODUCTION OF FATTY ACID ESTERS OF SHORT-CHAIN ALIPHATIC ALCOHOLS FROM FATS AND/OR OILS CONTAINING FREE FATTY ACIDS

Herbert Lepper, Duesseldorf-Benrath, and Lothar Friesenhagen, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 599,090

Claims priority, application Fed. Rep. of Germany, May 30, 1983, 3319590

Int. Cl.[4] C11C *3/02*

U.S. Cl. 260—410.9 R 20 Claims

1. A process for the production of fatty acid esters of a C_{1-6} aliphatic monoalcohol by catalytic transesterification consisting essentially of the steps of

(a) subjecting natural fats and/or oils containing free fatty acids, as an oil phase, having an acid number of over 1, to preliminary esterification with a C_{1-6} aliphatic monoalcohol in the presence of at least one acidic esterification catalyst at an elevated temperature no higher than 120° C. and under a pressure no higher than 5 bars, in the presence of a liquid entraining agent substantially immiscible with said oil phase, said liquid entraining agent being an alcohol, liquid at 50° C., selected from the group consisting of alkanepolyols having from 2 to 6 carbon atoms and 2 to 6 hydroxyls, polyethylene glycols, ethylene glycol mono-C_{1-6}-alkyl ethers and diethylene, glycol mono-C_{1-6}-alkyl ethers, for a time sufficient to reduce the free fatty acid content of said oil phase to an acid number of 1 or below,

(b) separating the reaction product by phase separation into an entraining agent phase containing the acidic esterification catalyst and the water of reaction, and the treated oil phase,

(c) subjecting the separated treated oil phase to transesterification with a C_{1-6} aliphatic monoalcohol under conventional alkali-catalyzed transesterification conditions and recovering said fatty acid esters of C_{1-6} aliphatic monoalcohols and

(d) partially to wholly removing the water of reaction from said entraining agent phase and recycling said dried entraining agent phase containing the acidic esterification catalyst to a further preliminary esterification step.

4,608,203

PROCESS FOR PRODUCING SOYBEAN PROTEIN POWDER USING A FLUIDIZED BED

Takeshi Akasaka, Izumisano; Masahiko Terashima, Osaka; Hiroyuki Kawade, Izumi, and Hitoshi Taniguchi, Sennan, all of Japan, assignors to Fuji Oil Company, Ltd., Osaka, Japan

Filed Dec. 10, 1984, Ser. No. 680,295

Claims priority, application Japan, Dec. 10, 1983, 58-233199

Int. Cl.[4] A23J *1/14*

U.S. Cl. 530—378 13 Claims

1. A process for producing a soybean protein powder which comprises spraying droplets of an aqueous liquid onto a starting soybean protein powder material in an amount of 5 to 25% by weight based on the weight of the powder material to moisten and agglomerate particles of the powder material in a fluidized bed and drying the powder material simultaneously or subsequently.

4,608,204

PROCESS FOR THE PREPARATION OF A LOW VISCOSITY ALKYL TOLUENE OR ALKYL XYLENE SULFONATE

Henry Y. Lew, and Alan E. Straus, both of El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 625,923, Jun. 29, 1984, abandoned, which is a continuation of Ser. No. 546,807, Oct. 31, 1983, abandoned. This application Nov. 13, 1985, Ser. No. 797,588

Int. Cl.[4] C07C *143/24;* C09K *3/00*

U.S. Cl. 260—505 N 18 Claims

1. A process for the preparation of a low viscosity aqueous alkyl toluene or alkyl xylene sulfonate from the alkyl toluene or alkyl xylene sulfonic acid obtained by the sulfur trioxide sulfonation of alkyl toluene or alkyl xylene having an average molecular weight of about 300 to 365 and a straight or branched alkyl side chain ranging from about C_{12} to C_{24} which comprises neutralizing the alkyl toluene or alkyl xylene sulfonic acid with aqueous sodium hydroxide in the presence of sufficient sodium chloride to lower the viscosity of the aqueous sodium alkyl toluene or alkyl xylene sulfonate produced to less than about 600 cp, while maintaining a homogeneous mixture.

4,608,205

POLYANIONIC BENZENE UREAS

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 473,412, Mar. 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 274,860, Jun. 18, 1981, abandoned. This application Sep. 24, 1984, Ser. No. 653,400

Int. Cl.[4] C07C *143/52, 143/54*

U.S. Cl. 260—506 2 Claims

1. The compound 4,4-ureylenebis(2-sulfobenzoic acid), disodium salt.

2. The compound 3,3-(carbonyldiimino)bis(6-hydroxy-5-sulfobenzoic acid), disodium salt.

4,608,206

FLUORINATED 3-KETOGLUTAROYL HALIDES

David C. England, Wilmington, and Edward G. Howard, Jr., Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 95,071, Nov. 16, 1979, Pat. No. 4,299,949. This application Jun. 26, 1981, Ser. No. 277,662

Int. Cl.[4] C07C *51/58, 55/40*

U.S. Cl. 260—544 F 2 Claims

1. The compound having the formula: $O{=}C(CF_2COX)_2$ where X is selected from the class consisting of F and Cl.

2. A process for the preparation of the compound $O{=}C(CF_2COF)_2$ which comprises reacting bis(2-methoxytetrafluoroethyl) ketone with sulfur trioxide, in the presence of methyl 2,2,3,3-tetrafluoro-3-methoxy propionate.

4,608,207

DIALKYL 2-ALKYLCARBONATOETHANEPHOSPHONATES

Hans-Josef Buysch, and Peter Mues, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

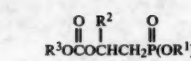
Filed May 4, 1984, Ser. No. 607,354

Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316888

Int. Cl.[4] C07F *9/40*

U.S. Cl. 558—179 1 Claim

1. Dialkyl 2-alkylcarbonatoethanephosphonate of the formula



wherein

R^1 and R^3 are identical or different and each represents an alkyl group of 1 to 4 carbon atoms, and

R^2 denotes hydrogen, an alkyl group of 1 to 4 carbon atoms or unsubstituted phenyl.

4,608,208

CONTROL VALVE DEVICE

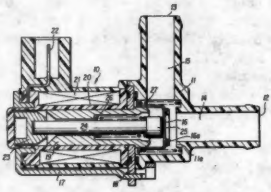
Kenji Yogo; Mamoru Nakamura, both of Toyota, and Shigeru Nishio, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 23, 1985, Ser. No. 768,579

Claims priority, application Japan, Aug. 24, 1984, 59-177288

Int. Cl.[4] F02M *5/08*

U.S. Cl. 261—39 R **5 Claims**



1. A control valve device for controlling fluid communication in a fluid passage in response to an input current signals from a switch device and changes in ambient temperature, said control device comprising;

a body member having an inlet port and an outlet port, said body having a fluid passage formed therein connecting said inlet port and said outlet port;

a valve member disposed in said fluid passage for controlling fluid communication in said fluid passage;

yoke means made of a magnetic material and fixedly secured on said body member;

an inner core disposed on a central axis in said yoke means;

a bobbin made of a nonmagnetic material and disposed on an outer periphery of said inner core;

a solenoid coil wound on said bobbin and forming a magnetic circuit with said yoke means and said inner core;

a plunger member positioned in said magnetic circuit and disposed on said central axis with said inner core wherein said plunger member is attracted by said inner core upon energization of said solenoid coil;

a shaft fixed in said plunger member at a first end and operatively associated with said valve member at an end opposite said first end;

a first spring supported by said body member at one end and biasing said valve member in a direction of a closed position thereof; and

a second spring supported by said body member at one end and biasing said valve member in a direction of an open position thereof wherein said second spring further comprises a shape memory alloy spring expandable so as to maintain a memorized shape at a predetermined temperature.

4,608,209

CARBURETER FOR INTERNAL COMBUSTION ENGINE

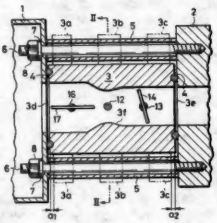
Shigeyoshi Nakamura, Odawara, Japan, assignor to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1985, Ser. No. 759,893

Claims priority, application Japan, Jul. 31, 1984, 59-116176[U]; Sep. 20, 1984, 59-141655[U]

Int. Cl.[4] F02M *17/40*

U.S. Cl. 261—64 E **11 Claims**



1. A carbureter for an internal combustion engine and made of a soft material, comprising:

a body having a first end face to be coupled to a manifold pipe via an elastic sealing member, and a second end face to be coupled to an air cleaner via an elastic sealing member;

a suction bore formed through said body between said first end face and said second end face;

a throttle valve shaft rotatably supported within said body across said suction bore;

a choke valve shaft rotatably supported within said body across said suction bore;

a reinforcing member having a high rigidity and having a length greater than the distance between said first end face and said second end face but smaller than the length obtained by adding said distance to thickness of said sealing members of said carbureter body; and

a plurality of arms provided in a zig-zag fashion at intervals relative to each other and located on both sides of axial line of said reinforcing member to nip said reinforcing member elastically in its posture of being placed along said suction bore.

4,608,210

METHOD FOR PRODUCING PLASTICALLY BONDED PROPULSION POWDERS AND EXPLOSIVES

Dietmar Müller, Karlsruhe, and Hiltmar Schubert, Walzbachtal, both of Fed. Rep. of Germany, assignors to Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e. V., Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,247

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412410

Int. Cl.[4] C06B *21/00*

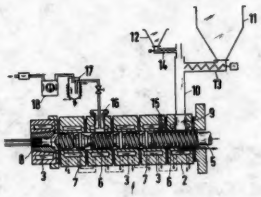
U.S. Cl. 264—3.2 **7 Claims**

1. A method of continuously extruding plastically bonded propulsion powder from crystalline explosives in an extruder of the type having screws rotating in a housing and wherein the housing has at least two openings provided in axially spaced relationship therein, one of the openings being provided to admit the plastic binder and the crystalline explosive material and another opening downstream thereof, said method comprising the steps of:

(a) introducing the plastic binder through said one opening to achieve a floating condition for the rotating screws wherein friction between the housing and the screws is minimized,

(b) after the screws have achieved this floating condition introducing the propulsive crystal and explosive material

so as to reduce the ratio of plastic binder to crystalline and explosive material and increase the content of crystalline and explosive material in the product,



(c) continuing to mix some plastic binder with the crystalline and explosive material in order to continuously provide this increased crystalline content of the product in a continuously operated extruder.

4,608,211

PROCESS FOR PREPARING LIPID VESICLES BY VAPORISATION OF SOLVENTS

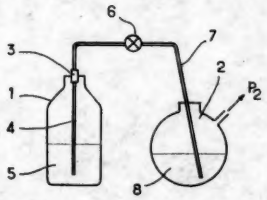
Rose-Marie Handjani; Alain Ribier, both of Paris, and Manlio M. Maurelli, Vaujours, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 8, 1984, Ser. No. 587,653

Claims priority, application France, Mar. 22, 1983, 83 04674

Int. Cl.[4] B01J *13/02;* **A61K** *9/50, 9/64*

U.S. Cl. 264—4.6 **15 Claims**



1. Process for preparing unilamellar lipid vesicles having an average diameter of at least 1,000 Å, each of these vesicles consisting of a spheroidal lipid lamella containing a substance to be encapsulated, which process comprises dissolving one or more lipids intended to form the lamella of the vesicles in at least one water-insoluble solvent, conditioning the resulting lipid solution at a pressure P_1 and at a temperature θ_1, dissolving the substance to be encapsulated in water to obtain an aqueous phase, conditioning said aqueous phase at a pressure P_2 and a temperature θ_2, injecting the lipid solution into the aqueous phase at a low flow rate so as initially to form droplets and so that solvent of the lipid solution vaporises on coming into contact with the said aqueous phase, the pressure P_2 being less than P_1 and less than the vapour pressure of the solvent in the said droplets at the temperature θ_2.

4,608,212

METHOD FOR THE ELECTROSTATIC TREATMENT OF MONOFILAMENTS

Robert E. Isner, 222 Masling Ave., Tarrytown, N.Y. 10591

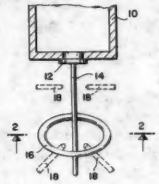
Continuation-in-part of Ser. No. 709,601, Jul. 29, 1976, abandoned. This application Feb. 16, 1984, Ser. No. 580,881

Int. Cl.[4] B06B *1/02;* **D01D** *5/253*

U.S. Cl. 264—24 **5 Claims**

2. In the formation of fibers wherein a continuous lineal monofilament is emitted in liquid state from a molten reservoir thereof into a gaseous environment, the steps of directing said liquid monofilament into surrounding flowing relation around an elongate needle-like electrode element dependent from the locus of liquid monofilament emission from said reservoir,

subjecting a portion of the surface of said continuous liquid mnofilament to a selectively directed transverse unidirectional electrostatic force field having one terminus at the



dependent terminal end of said needle-like electrode element and of a magnitude sufficient to effect a localized and radially outwardly directed deformation of such portion of the perimetric surface of said continuous flowing monofilament to produce a radially extending hair-like appendage thereon.

4,608,213

METHOD AND MOLD APPARATUS FOR MOLDING A PADDING MEMBER

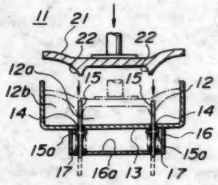
Masao Kurumizawa; Mitsuru Terui, both of Yokohama, and Nobuyasu Yamaguchi, Hamakita, all of Japan, assignors to Ikeda Bussan Co., Ltd., Yokohama and Nichiei Industry Co., Ltd., Hamakita, both of, Japan

Filed May 31, 1984, Ser. No. 615,532

Claims priority, application Japan, Nov. 4, 1983, 58-207234; Nov. 4, 1983, 58-207235

Int. Cl.[4] C08J *9/22;* **B29C** *43/20;* **B32B** *5/14, 5/16*

U.S. Cl. 264—45.1 **7 Claims**



1. A method of producing a padding member having side by side portions of different hardnesses integral with each other, comprising:

providing a lower mold half having partition wall means movably extending through the bottom of said lower mold half in a fluid-tight manner and spring urged to protrude upwardly into the interior of said lower mold half to form a plurality of cavities;

filling moldable materials of which the padding member is to be formed and having hardnesses different from each other into said cavities;

placing over said lower mold half an upper mold half having pressing members spaced from each other in the horizontal direction along lines corresponding to the upper edges of said partition wall means and projecting downwardly from said upper mold half at positions corresponding to said partition wall means and carrying out molding, said pressing members, during molding, pressing on said partition wall means for lowering said partition wall means while allowing the materials being molded to abut each other, whereby said materials in said cavities are integrally joined to each other during molding.

4,608,214

PROCESS FOR THE PRODUCTION OF OPTIONALLY CELLULAR MOLDINGS

Gerhard Ballé, Leverkusen; Reiner Paul, Muelheim, and Werner Rasshofer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 685,187

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1983, 3347573

Int. Cl.[4] C08J *9/34, 9/14;* C08G *18/14*

U.S. Cl. 264—45.5 10 Claims

1. A process for the production of an optionally cellular molding which is based on a polyurethane and/or polyurethane-urea and has an impervious surface, by reacting in a closed mold a reaction mixture comprising

(a) at least one organic polyisocyanate,

(b) at least one compound which has a molecular weight ranging from 400 to about 12,000 and at least two isocyanate-reactive groups and

(c) optionally at least one compound which has a molecular weight ranging from 32 to 399 and at least two isocyanate-reactive groups,

wherein said reaction mixture additionally comprises

(e1) a liquid and sedimentation-stable polymer dispersion obtained by the free radical addition polymerization or copolymerization of one or more olefinically unsaturated monomers in a compound corresponding to component (b), and optionally

(e2) at least one metal salt of a monocarboxylic acid having at least 8 carbon atoms

the polymer solids of component (e1) being present in a quantity of about 0.01 to 3 parts, by weight, based on 100 parts of component (b) and component (e2) being present in a quantity of up to about 2 parts by weight, based on 100 parts of component (b).

5. The process of claim 1 wherein said reaction mixture contains an organic blowing agent.

4,608,215

PREPARATION OF CERAMICS

Stephen T. Gonczy, Mount Prospect; Randy J. Lawson, Arlington Heights, and Bruce I. Rosen, Skokie, all of Ill., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 23, 1983, Ser. No. 565,077

Int. Cl.[4] C04B *35/14*

U.S. Cl. 264—56 13 Claims

1. A process for the preparation of a fully dense ceramic body which comprises admixing a hydrolyzed alcoholic solution of a siilcon alkoxide with an alcoholic solution of an alkyl magnesium compound at gelation conditions, drying the resultant gel at an elevated temperature to remove volatile compounds, pressing the resultant powder into a desired shape, sintering the powder at a temperature of from about 850° to 950° C. to form a densified ceramic, and recovering said ceramic.

4,608,216

METHOD FOR THE CASTING OF HOLLOW SLABS OUT OF CONCRETE

Jaakko O. Barsk, Tampere, Finland, assignor to Oy Partek Ab, Toijala, Finland

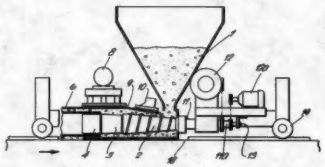
Filed May 4, 1984, Ser. No. 607,135

Claims priority, application Finland, May 9, 1983, 831606

Int. Cl.[4] B28B *1/08, 21/08*

U.S. Cl. 264—70 9 Claims

1. A method for casting hollow slabs out of concrete, in which concrete mix is extruded onto a base of a casting apparatus by means including at least one forming member for forming cavities in the slabs and the mix is compacted by moving said at least one forming member, wherein at least one end of said at least one forming member is moved along a predetermined path so that one point along a longitudinal axis of said at least one forming member maintains its position throughout movement of the member with respect to said longitudinal axis while another point longitudinally displaced along said longitudinal axis radially changes its position with respect to said longitudinal axis during movement of the forming member.



4,608,217

METHOD FOR THE PRODUCTION OF AN EAR PLUG

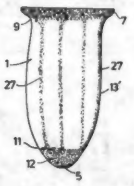
Kalman Csiki, Landskrona, Sweden, assignor to Gullfiber AB, Billesholm, Sweden

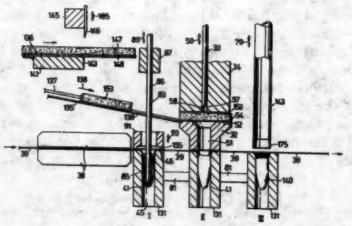
Division of Ser. No. 403,657, May 20, 1982, Pat. No. 4,498,469. This application Oct. 2, 1984, Ser. No. 656,899

Claims priority, application Sweden, Oct. 22, 1980, 8007422

Int. Cl.[4] B29C *63/04, 63/22*

U.S. Cl. 264—249 8 Claims





3. A method of producing an ear plug having an elongate body of elastic material surrounded by a sheath of flexible plastics material which is intended for insertion in the auditory meatus of an ear, said method comprising:

(a) positioning a thermoplastics film or foil over a forming hole;

(b) pushing a plunger die with the film or foil into the forming hole to deep drawn the film or foil into a sheath having a shape substantially corresponding to the shape of the ear plug;

(c) removing the plunger die from the forming hole; and

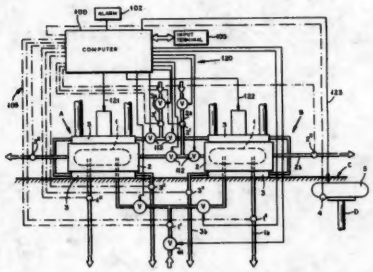
(d) inserting the elastic material into the sheath while said sheath is in the forming hole.

4,608,218

METHOD FOR THE VULCANIZATION OF PNEUMATIC TIRES

Karl-Heinz Rümmler, Hanover; Willi Sievers, Korbach; Karl-Henning Dette, Wulfsen; Lothar Köster, Hamburg, and Romeo Luscalu, Buxtehude, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke AG, Hanover and Fried. Krupp GmbH, Essen, both of, Fed. Rep. of Germany

Continuation of Ser. No. 619,032, Jun. 11, 1984, abandoned.
This application Oct. 8, 1985, Ser. No. 786,149
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3320963
Int. Cl.[4] B29H 5/02
U.S. Cl. 264—315 7 Claims



1. In a method of operating a tire-vulcanizing press in which a processed tire body is received in a vulcanizing form and a heating medium is delivered to said form to heat said body which requires a certain predetermined total heat quantity for a desired degree of vulcanization, the improvement which comprises the steps of:

determining the temperature of said body prior to vulcanization;

taking temperature measurements at intervals of 1 to 40 seconds of at least one temperature generated by said medium and related to the transfer to heat of said body and representing increments of heat transmitted to said body when related to a measurement of the temperature of said body prior to vulcanization;

continuously adding said measurements during the course of vulcanization;

comparing the summation of said measurements continuously with a value representing said total heat quantity;

terminating vulcanization by computer control upon the summation equalling said value; and

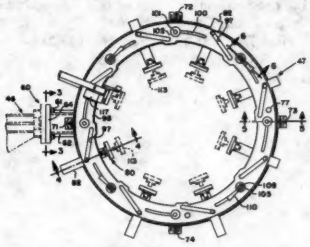
empirically determining and storing a plurality of values representing total heat quantities for a multiplicity of different bodies in dependence upon their respective compositions, tire type and geometric shape in the form of heat quantities required to bring the respective bodies to respective critical points by running test heatings of the different bodies of a variety of compositions and geometric shapes and interpolating between the results obtained by these test heatings, the increments of heat transmitted to said processed body being established relative to said measurements in accordance with the relationships defining heat transfer between said medium and the interior of each body to serve as basis values for said computer control of the vulcanization process.

4,608,219

TIRE PRESS, LOADER AND METHOD

Anand P. Singh, Youngstown; Thomas A. Crumbacher, Columbiana; Gary R. Naylor, Canfield, and Thomas R. Fagan, Jr., Atwater, all of Ohio, assignors to NRM Corporation, Columbiana, Ohio

Filed Jun. 11, 1985, Ser. No. 743,648
Int. Cl.[4] B29H 5/02
U.S. Cl. 264—315 43 Claims



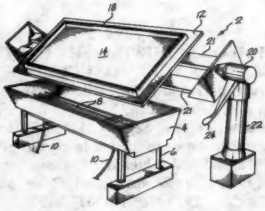
1. A tire curing press loader comprising a support ring, a series of chuck shoe assemblies mounted on said ring, each assembly including an actuator for the respective chuck shoe to grip or release a tire, and means mounting said chuck assemblies on said ring for uniform simultaneous expansion or contraction to accommodate tires of different sizes.

4,608,220

METHOD OF FORMING COMPOSITE MATERIAL ARTICLES

John E. Caldwell, Kent; Michael R. Chapman, Federal Way; Kenneth J. Goodwin, Seattle, and Patrick A. Lowery, Auburn, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1984, Ser. No. 684,245
Int. Cl.[4] B29C 43/10, 43/14, 43/20
U.S. Cl. 264—510 18 Claims



1. A method of manufacturing an article from a plastic material, comprising:

providing male mold means having a male mold surface with a shape essentially identical to the desired shape of the inner surface of the completed article;

forming said material onto said mold means to conform said material to said shape, to accurately form the inner surface of the article;

providing a female mold having a female mold surface with a shape and dimensions essentially identical to the desired shape and dimensions of the outer surface of the completed article, and placing the female mold surface into contact with the formed material on the male mold means;

curing the formed material in the female mold, including exerting through flexible means essentially uniform pressure on the material to urge it against the female mold

surface, to accurately control the outer dimensions of the article; and

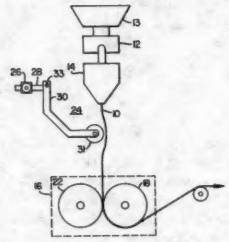
while placing the female mold surface into contact and curing the formed material, maintaining said shape of the inner surface of the article.

4,608,221

PROCESS FOR REDUCING DRAW RESONANCE IN POLYMERIC FILM

Stuart J. Kurtz, Martinsville; Ernest H. Roberts, Somerset, and Peter J. Lucchesi, Middlesex, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 28, 1984, Ser. No. 687,250
Int. Cl.[4] B29C *47/88*
U.S. Cl. 264—556 9 Claims



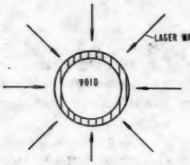
1. A process for reducing draw resonance of a polymeric molten film susceptible to draw resonance under conditions which would cause draw resonance by extruding the film from a die and rapidly cooling said film in a rapid cooling zone containing a pressure roll and chill roll which comprises extruding said film from said die to said cooling zone, providing a tensioning device between said die and the nip of said pressure roll and chill roll, said tensioning device providing a substantially friction free surface with respect to said moving film, said tensioning device being responsive to tensioning variations of said moving film between said die and said cooling zone and being adapted to provide a substantially constant tension in said moving film.

4,608,222

METHOD OF ACHIEVING THE CONTROLLED RELEASE OF THERMONUCLEAR ENERGY

Keith A. Brueckner, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 116,707, Jan. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 65,754, Jul. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 866,778, Oct. 15, 1969, abandoned. This application Jul. 10, 1973, Ser. No. 377,508
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—104 37 Claims



1. A method of achieving the release of thermonuclear energy which comprises:

(a) preforming a minute closed hollow shell of solid fusion fuel material,

(b) establishing a laser light source to produce a converging wave coherent light energy in phase in time,

(c) directing a pulse of light energy from said source to said shell to create a surface heating and vaporization and an inwardly traveling shock wave to implode the shell to effect release of neutrons and a resultant thermonuclear condition, and

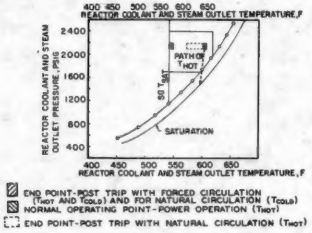
(d) utilizing the kinetic energy of the expanding D-T plasma as a source of thermal energy.

4,608,223

ABNORMAL TRANSIENT DISPLAY SYSTEM FOR NUCLEAR REACTOR OPERATION

Robert C. Twilley, Jr., Forest, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 1, 1982, Ser. No. 353,264
Int. Cl.[4] G21C *17/00*
U.S. Cl. 376—247 8 Claims


400 450 500 550 600 650
REACTOR COOLANT AND STEAM OUTLET TEMPERATURE, F
REACTOR COOLANT AND STEAM OUTLET PRESSURE, PSIG
2400
2000
1600
1200
800
400
PATH OF THOT
50 TSAT
SATURATION
400 450 500 550 600 650
REACTOR COOLANT AND STEAM OUTLET TEMPERATURE, F
END POINT-POST TRIP WITH FORCED CIRCULATION (THOT AND TCOLD) AND FOR NATURAL CIRCULATION (TCOLD)
NORMAL OPERATING POINT-POWER OPERATION (THOT)
END POINT-POST TRIP WITH NATURAL CIRCULATION (THOT)

1. A system for monitoring abnormal transient conditions in a coolant fed pressurized water nuclear reactor installation comprising display means for providing a static display area formed from a pressure-temperature area which is bounded by a saturation curve and enclosing certain reactor operating perameters indicating that the nuclear steam supply system installation is within normal operating limits within this static display area and means for providing a dynamic display of reactor coolant hot leg temperature, said dynamic display being superimposed on said static display to indicate normal reactor operation so long as the dynamic display is within the static display area, and means for sequentially sampling said operating perameters permitting the continuous updating of said dynamic display.

4,608,224

NUCLEAR REACTOR COOLED BY A LIQUID METAL

Alain Brachet, Orsay, France, assignor to Service National Electricite de France, France

Continuation of Ser. No. 277,639, Jun. 26, 1981, abandoned. This application Nov. 29, 1983, Ser. No. 556,067
Claims priority, application France, Jul. 4, 1980, 80 14963
Int. Cl.[4] G21C *9/00, 15/18, 19/00*
U.S. Cl. 376—405 11 Claims

1. A nuclear reactor cooled by a liquid metal comprising:

a main vessel sealed by a sealing slab and containing liquid metal having a free level covered by inert gas,

a primary vessel housing a reactor core, positioned within the main vessel and defining in the latter a hot collector positioned above the reactor core and a cold collector formed by a space defined between the main vessel and the primary vessel,

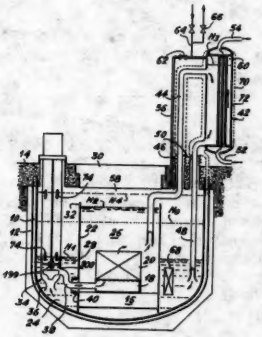
means for permitting the reactor to operate as an integrated-type reactor in the shut-down mode wherein the complete primary circuit is contained in the main vessel and as a loop-type reactor at other times wherein an intermediate heat exchanger and a primary pump are positioned outside the main vessel,

at least one intermedite heat exchanger positioned outside the main vessel and communicating with the hot collector

by at least one intake pipe and communicating with the cold collector by at least one outlet pipe, said intermediate heat exchanger being positioned at a level above a maximum value of the free level of liquid metal in the main vessel, the liquid metal normally contained in said intermediate heat exchanger having a free level covered by inert gas and,

at least one primary pump for circulating said liquid metal between the cold collector and the reactor core for circulating liquid metal to the intermediate heat exchanger through said intake and outlet pipes, said primary pump being immersed in the liquid metal of the cold collector,

pressurizing means for pressurizing the inert gas of the main vessel to a high value relative to the inert gas of the intermediate heat exchanger, actuation of said means controlling filling the intermediate heat exchanger and the intake and outlet pipes with liquid metal by counterpressure and giving a minimum value to the pressure at the free level of liquid metal in the main vessel, said pressurizing means being actuated under normal operating conditions of the reactor, said gas pressurizing means establishing a pressure difference between said inert gas convering said main vessel and said inert gas covering said heat exchanger free level which is substantially equal to the head of the liquid metal located between liquid metal level in the heat exchanger and a reference liquid metal level in the vessel,



gas pressurizing balancing means which includes at least one balancing pipe connecting the coverings of inert gas of the intermediate heat exchanger and of the main vessel for balancing pressure of the coverings of the inert gas of the main vessel and of the intermediate heat exchanger so that liquid metal in the intermediate heat exchanger is at the same pressure as liquid metal in the main vessel prior to actuation of said primary pump, operating means which includes one valve which is closed under normal operating conditions and which is opened under shut-down conditions for placing said gas pressurizing means in a closed configuration during operating conditions in which said inert gas coverings are separated for permitting circulation of liquid metal through the intermediate heat exchanger by said primary pump, and in an open configuration during shut-down conditions in which said inert gas coverings are in fluid communication for emptying the intermediate heat exchanger and the intake and outlet pipes by gravity into the main vessel and establishing a shut-down value to the free level of liquid metal in the main vessel, said shut-down level being above said reference level, and establishing fluid communication between the hot collector and the cold collector during shut-down conditions, said operating means being opened under shut-down operating conditions of the reactor,

at least one passage means in said primary vessel said passage means including an upper edge of said primary vessel located below said slab to define said passage means between said upper edge and said slab to be at a level above a maximum value of the free level of liquid metal in the main vessel during operating conditions and below a minimum value of the free level of liquid metal in the main vessel during shut-down conditions, for establishing in shut-down conditions and only during shut-down conditions, fluid communication between the hot collector and the cold collector which permits liquid metal to circulate through said passage means between sain hot collector and said cold collector within said main vessel, said minimum value being below said reference level, and

a shut-down heat exchanger means operable during reactor shut-down conditions and located in said cold collector below said minimum free level of liquid metal for removing power and for cooling the liquid metal contained within said main vessel, under said shut down operating conditions of said reactor for establishing a thermal siphon effect.

4,608,225

COMPOSITION FOR FIXING METAL POWDER MOLDING AT SINTERING

Takahumi Sakuramoto; Eishi Asoshina; Takashi Tominaga; Yukio Shimizu, all of Osaka; Tsuyoshi Morishita, Hiroshima; Sigemi Osaki, Hiroshima, and Noriyuki Sakai, Hiroshima, all of Japan, assignors to Nitto Electric Industrial Co. Ltd. and Mazda Motor Corporation, both of, Japan

Filed Apr. 26, 1985, Ser. No. 727,631

Claims priority, application Japan, Apr. 28, 1984, 59-86918

Int. Cl.[4] B22F *7/00*

U.S. Cl. 419—5 **5 Claims**

1. A process for sintering comprising the steps of providing a fixing composition layer comprising a thermosetting resin capable of providing an amount of residual carbon after sintering of at least 0.5% by weight on a metal base material,

providing a metal powder molding composition comprising a mixture of a metal powder and a synthetic resin-based binder on the fixing composition layer and

sintering the metal powder molding in a non-oxidizing atmosphere.

4,608,226

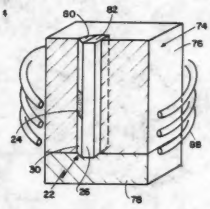
METHOD OF FORMING A DIAMOND TOOTH INSERT FOR A DRILL BIT AND A DIAMOND CUTTING ELEMENT FORMED THEREBY

Jean-Pierre Lauvinerie, Crespieres, and Annick LeFeuvre, Elancourt Maurepas, both of France, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Jun. 22, 1984, Ser. No. 623,352

Int. Cl.[4] B22F *7/00*

U.S. Cl. 419—5 **11 Claims**



1. An improvement in a method for manufacturing a drill bit, said improvement for forming a diamond cutting element for use in said drill bit, said improvement comprising the steps of:

degreasing a preformed integral diamond element;

maintaining said diamond element free of surface contamination; and

hot pressing a metallic matrix on a surface of said cleaned diamond element at less than 1400 degrees Centigrade, while said diamond element is maintained free from surface contamination,

whereby a secure bond is established between said cleaned diamond element and said metallic matrix forming said cutting element.

4,608,227

SINTERED TITANIUM HORSESHOES

Mildred Preiss, 6 Nassau Dr., Great Neck, N.Y. 11021

Filed Sep. 9, 1985, Ser. No. 773,638

Int. Cl.[4] B22F *1/00*

U.S. Cl. 419—23 **5 Claims**

1. A process for fabricating horseshoes from titanium powder, which comprises:

a. preparing sponge (ESP) commercially pure titanium powder;

b. compacting said titanium powder into a horseshoe shaped cavity with a pressure of between 40 and 50 tons per square inch; and

c. sintering the compacted titanium powder: in a furnace having a surface lining selected from the group consisting of molybdenum and tungsten as follows and under the following conditions:

(1) temperature of 2300° F. to 2800° F.;

(2) time at temperature 3 to 4 hours;

(3) atmosphere being a vacuum; and

(4) cooling.

4,608,228

Ni-Fe MAGNETIC HEAD INCLUDING 1.5–2% Ta

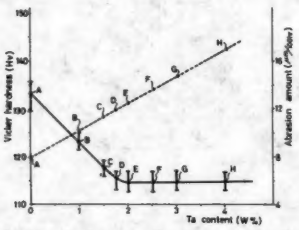
Akihiro Makino, and Koichi Mukasa, both of Koide, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 19, 1983, Ser. No. 562,716

Claims priority, application Japan, Dec. 20, 1982, 57-222153

Int. Cl.[4] C22C *19/03*

U.S. Cl. 420—459 **1 Claim**



1. A magnetic head made of a Ni-based ternary alloy consisting only of nickel, iron and tantalum, in which the content of tantalum in the alloy is from about 1.5% to about 2% by weight.

4,608,229

PALLADIUM METAL BASE DENTAL ALLOY

Richard D. Lanam, Westfield, and Allen R. Robertson, Edison, both of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Sep. 12, 1984, Ser. No. 649,468

Int. Cl.[4] C22C *5/04*

U.S. Cl. 420—464 **6 Claims**

1. A castable dental alloy composition suitable for bonding with dental porcelain consisting essentially of about 60 to 85 percent by weight palladium, about 5 to 20 percent by weight copper, about 3 to about 15 percent by weight gallium, about 0.5 to about 2 percent by weight gold, about 3.2 to about 6 percent by weight indium, about 0.005 to about 0.02 percent by weight ruthenium, 0 to about 2 percent by weight tin and 0 to about 2 percent by weight nickel, wherein the sum of the concentrations of gold, indium, ruthenium, tin and nickel present in the alloy ranges from greater than 5.5 percent by weight to about 8.5 percent by weight.

4,608,230

Pb-Sn-Sb-Ag SOLDER ALLOY

Carl DiMartini, Piscataway, and John Lane, Westfield, both of N.J., assignors to Fry Metals, Inc., Altoona, Pa.

Filed Mar. 4, 1985, Ser. No. 708,075

Int. Cl.[4] C22C *11/06*

U.S. Cl. 420—566 **3 Claims**

1. A solder alloy consisting essentially of 87.5%–96.5% lead, 3%–10% tin, 0.5%–2.0% antimony, and approximately 0.25% silver.

4,608,231

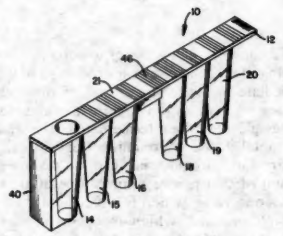
SELF-CONTAINED REAGENT PACKAGE DEVICE FOR AN ASSAY

Thomas R. Witty, Sandy, Utah; Robert E. Curry, Ramsey, N.J., and Roger E. Smith, Bountiful, Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 681,034, Dec. 12, 1984. This application Jun. 3, 1985, Ser. No. 740,593

Int. Cl.[4] G01N *33/53*

U.S. Cl. 422—61 **17 Claims**



1. A self-contained reagent package device useful in the performance of chemical and biological assays comprising:

a substantially planar support member;

a plurality of wells in said support member, all of said wells having open top ends for access thereto, and all but one of said wells being integrally formed as a unitary structure with and from the same material as said support member, said one well having its interior surfaces coated with an immunoreactive substance for carrying out the assay;

at least one of said integrally formed wells having a predetermined amount of reagent therein;

another of said integrally formed wells being empty so that the specimen to be assayed may be deposited therein; and

a protective cover sealed over the open ends of said wells to maintain the incorporated reagents in stable form prior to

use thereby providing a self-contained reagent package device.

4,608,232

GAS SENSOR

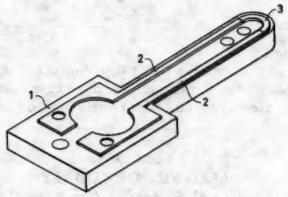
Naomasa Sunano, Akashi, and Naotatsu Asahi, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,858

Claims priority, application Japan, Jul. 21, 1981, 56-114961; Feb. 1, 1982, 57-13261

Int. Cl.⁴ G01N *27/12*

U.S. Cl. 422—88 **12 Claims**



1. A gas sensor comprising:
an electrically insulating base;
electrodes formed on said base; and
a gas sensitive film being formed on the surface of said base at a portion, where the film detects a gas to be sensed and the film electrically contacts said electrodes;
said gas sensitive film being formed of a thermal-sprayed film of a semiconductor oxide having a perovskite structure with fine cracks therein by plasma spray coating powders of a perovskite structure oxide having a particle size equal to or smaller than 25 μm.

4,608,233

MIXING METHOD AND APPARATUS FOR PREPARING MULTI-COMPONENT PLASTIC MATERIALS ESPECIALLY POLYURETHANES

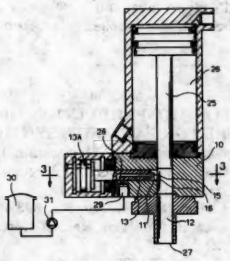
Carlo Fiorentini, Saronno, Italy, assignor to Afros S.p.A., Caronno Pertusella, Italy

Filed Apr. 4, 1983, Ser. No. 481,913

Claims priority, application Italy, Apr. 6, 1982, 20594 A/82

Int. Cl.⁴ C08F *299/06*; B01F *5/20*

U.S. Cl. 422—133 **11 Claims**



1. A method for uniformly mixing first and second chemically interactive main components and a colouring agent to produce a multi-component coloured plastic material, which method comprises the steps of:
disposing a control and cleaning member for movement along an axis of a mixing chamber toward and away from an output end of the mixing chamber;
moving the control member to a retracted position in which the control member opens first and second inlet apertures on sides of the mixing chamber that are opposite each other and connects a third inlet aperture, located adjacent the movable control member upstream from the mixing chamber, to a passage in the control member;
supplying the first and second chemically interactive main components under pressure to respective ones of the first and second inlet apertures of the mixing chamber so that the main components feed into the mixing chamber and collide with each other when the control member is moved to its retracted position;
supplying the colouring agent to the third inlet aperture under pressure, so that when the moveable control member is moved to its retracted position, the colouring agent feeds through the upstream third inlet aperture into the passage in the control member and into the mixing chamber at a position located essentially between the first and second inlet apertures in the mixing chamber, and along the axis of the mixing chamber toward the output end thereof, to mix the first and second chemically interactive main components and the colouring agent uniformly in the mixing chamber; and
moving the control member toward an advanced position adjacent the output end of the mixing chamber so that the control member closes the inlet apertures to interrupt the feeding of the first and second chemically interactive main components and the colouring agent through their respective inlet apertures after a mixing operation.

5. Apparatus for uniformly mixing first and second chemically interactive main components and a colouring agent to produce a multi-component coloured plastic material, which apparatus comprises:
a mixing head including a mixing chamber having an output end and having first and second inlet apertures that are opposite each other for the first and second chemically interactive main components;
a control and cleaning member mounted in the mixing head so that it has a reciprocable movement along an axis of the mixing chamber, the control and cleaning member including a colouring agent feed channels having at least a portion thereof extending longitudinally through the control and cleaning member and axially at one end into the mixing chamber essentially between the first and second inlet apertures in the mixing chamber when the control and cleaning member is in a retracted position;
a third inlet aperture in the mixing head adjacent the control and cleaning member and upstream from the mixing chamber;
means for supplying the first and second chemically interactive main components under pressure to their respective first and second inlet apertures in the mixing chamber so that they collide with each other;
means for supplying a colouring agent under pressure to the third inlet aperture in the mixing head; and
means for moving the control and cleaning member between an advanced position in which the control and cleaning member closes all of the inlet apertures to prevent the feeding of the first and second components and the colouring agent into the mixing chamber, and a retracted position for a component mixing operation in which the control and cleaning member opens the first and second inlet apertures and permits flow of the first and second chemically interactive components into the mixing chamber, and connects the other end of the feed channel in the control and cleaning member with the upstream third inlet aperture to permit flow of the colouring agent through the feed channel into the mixing chamber, the control and cleaning member, upon being moved from the retracted position toward the advanced position by the moving means, also closing all of the inlet apertures to interrupt flow of the first and second main components and the colouring agent into the mixing chamber.

11. Apparatus for uniformly mixing first and second chemically interactive main components and a colouring agent to

produce a multi-component coloured plastic material, which apparatus comprises:

a mixing head including an L-shaped mixing chamber having a first cylindrical mixing chamber portion and a second cylindrical mixing chamber portion larger than and angularly oriented to the first mixing chamber portion, the first mixing chamber portion having first and second lateral inlet apertures on sides thereof that are opposite to each other and having an output end opening into the second mixing chamber portion;

a first control member mounted in the mixing head so that it has a reciprocable movement along an axis of the first mixing chamber portion between an advanced position in which the control member prevents the feeding of first and second components and a colouring agent into the mixing chamber, and a retracted position for a component mixing operation, the first control member including a colouring agent feed channel having at least a portion thereof extending longitudinally through the control member and axially opening into the first mixing chamber portion, essentially between the first and second inlet apertures in the first mixing chamber portion when the first control member is in its retracted position;

a third inlet aperture in the mixing head adjacent the first control member and upstream from the first mixing chamber portion;

a second control member mounted in the mixing head so that it has a reciprocable movement in the second mixing chamber portion between an advanced position in which the second control member closes the output end of the first mixing chamber portion, and a retracted position in which the mixed material can be delivered from the output end of the first mixing chamber portion into the second mixing chamber portion;

means for supplying the first and second chemically interactive main components under pressure to their respective first and second inlet apertures in the first mixing chamber portion so that they collide with each other;

means for supplying the colouring agent under pressure to the third inlet aperture in the mixing head; and

respective moving means for moving the first and the second control members from their advanced positions to their retracted positions so that the first control member opens the first and second inlet apertures and connects the feed channel in the first control member with the upstream third inlet aperture to permit flow of the first and second chemically interactive main components and the colouring agent, respectively, into the mixing chamber, and so that the second control member opens the output end of the first mixing chamber portion;

the moving means for the first control member being also for moving the first control member toward its advanced position so that the control member closes all of the inlet apertures and thereby interrupts flow of the first and second main components and the colouring agent into the first mixing chamber portion.

4,608,234

DEVICE FOR TENSIONING A THIN PLATE

Jean-Jacques Aubert, St. Egreve; Alain Basset, Grenoble; Bernard Bechevet, Claix, and Claude Roulin, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, France

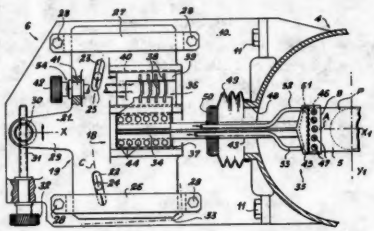
Filed Sep. 17, 1984, Ser. No. 651,528

Claims priority, application France, Sep. 20, 1983, 83 14921

Int. Cl.[4] C30B *35/00*

U.S. Cl. 422—249 **7 Claims**

1. A device for tensioning a thin plate in a plane, said device comprising at least two assemblies, each assembly including a support member lying parallel to said plane, said support member supporting means for tensioning one end of the plate along a tension axis in said plane, said tensioning means comprising means for retaining said end and elastic means for exerting said tension, and said tensioning means being mounted on rotation means comprising a base member which is rotatable on said support member about a rotation axis which is perpendicular to



said plane, said assemblies being distributed about the periphery of the plate so as to maintain the plate in equilibrium under the tensions exerted by all of said tensioning means.

4,608,235

RECOVERY OF COBALT

Clarence D. Vanderpool; Richard A. Scheithauer, and Richard G. W. Gingerich, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 21, 1985, Ser. No. 714,329

Int. Cl.[4] C01G *51/00*

U.S. Cl. 423—53 **4 Claims**

1. A process for recovering cobalt from a stellite alloy containing cobalt, chromium, nickel and tungsten said process comprising:

(a) adding said alloy to fused sodium hydroxide at a temperature of from about 750° C. to about 1000° C. to form a reaction mixture, the amount of said sodium hydroxide being sufficient to subsequently form sodium chromate and tungstate and cobalt hydroxide and nickel, hydroxide;

(b) heating said reaction mixture at a temperature of from about 750° C. to about 1000° C. while introducing an oxidizing gas into said reaciton mixture to oxidize the metals contained therein and form a melt which consists essentially of said sodium salts and said hydroxides;

(c) cooling said melt;

(d) contacting the resulting cooled melt with water to form a solution containing the major portion of said sodium salts and a solid containing the major portion of said hydroxides;

(e) separating said solid from said solution;

(f) washing said solid with water to remove the remaining portion of said sodium salts; and

(g) separating the resulting washed solid from the resulting wash water.

4,608,236

PROCESS FOR THE PRODUCTION OF A SEED MIXTURE FOR FAUJASITE SYNTHESIS

Hans Strack, Alzenau, and Peter Kleinschmit, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,164

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311339

Int. Cl.[4] C01B *33/26*

U.S. Cl. 423—118 **12 Claims**

1. A process for the production of a seed mixture for faujasite synthesis, comprising reacting amorphous, synthetic sodium aluminum silicate, in the form of a powder or filter cake, with an Na_2O-supplying compound, selected from the group consisting of sodium hydroxide, sodium silicate and sodium aluminate, in an aqueous system at temperatures of 10° to 35° C. whereby a mixture is obtained having $Na_2O:Al_2O_3:SiO_2:H_2O$ in the ratio $(12\pm3):1:(15\pm3):(240\pm60)$ and allowing this mixture to age for at least 24 hours.

4,608,237

USE OF POLYMERS IN ALUMINA PRECIPITATION IN THE BAYER PROCESS OF BAUXITE BENEFICIATION

William J. Roe, Aurora, and Jacqueline L. Perisho, Oak Park, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 726,544, Apr. 24, 1985, abandoned. This application Nov. 13, 1985, Ser. No. 797,717

Int. Cl.[4] C01F *7/04*

U.S. Cl. 423—122 11 Claims

1. A method of reducing the percent alumina trihydrate crystals smaller than 200 micron in diameter, which crystals are produced during crystallization of alumina trihydrate from pregnant Bayer Process liquors contaminated with sodium oxalate, which comprises adding to the pregnant Bayer Process liquors, after red mud separation and immediately prior to crystallization of alumina trihydrate, an effective amount of a high molecular weight polyacrylic acid having a weight average molecular weight of at least one million and containing at least 50 mole percent acrylic acid monomer.

4,608,238

PROCESS FOR TREATING PHOSPHO-GYPSUM WASTE PRODUCT FROM WET-ACID PROCESS OF MAKING PHOSPHORIC ACID

Eddie K. Wilson, Sr., 8294 Dogwood Rd., Germantown, Tenn. 38138, and Silvio J. Spigolon, 1800 Randolph Pl., No. 4, Memphis, Tenn. 38119

Filed Jul. 27, 1984, Ser. No. 634,965

The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.

Int. Cl.[4] C01F *1/00, 5/10, 25/16*

U.S. Cl. 423—178 9 Claims

1. In a process for treating phospho-gypsum waste product which is produced in the manufacture of phosphoric acid by the wet-acid process in which suitable phosphate rock is treated with sulfuric acid to produce phosphoric acid and in which a mixture of phospho-gypsum waste product and carbonaceous material is heated to produce a mixture of gaseous SO_2, P_2O_5 containing materials and HF containing materials, the improvement which comprises heating the mixture of phospho-gypsum waste product and carbonaceous material first at a reducing temperature and then at an oxidizing temperature to produce HF containing materials, containing hydrogen and fluorine values, passing the HF containing materials through an H_2SO_4 scrubber to strip off the hydrogen values and subsequently washing the remainder with water to remove the fluorine values.

4,608,239

REMOVAL OF IRON PENTACARBONYL FROM GASEOUS STREAMS CONTAINING CARBON MONOXIDE

Thomas J. Devon, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 6, 1985, Ser. No. 805,638

Int. Cl.[4] B01D *47/00;* B01J *8/00;* C01B *00/00*

U.S. Cl. 423—210 6 Claims

1. A process for removing iron pentacarbonyl from carbon monoxide feed gas, comprising contacting said gas with a removal agent comprising alkali metal hydroxide in association with a high boiling hydroxylic solvent to form a nonvolatile iron carbonylate salt, and separating said gas from said agent and said salt.

4,608,240

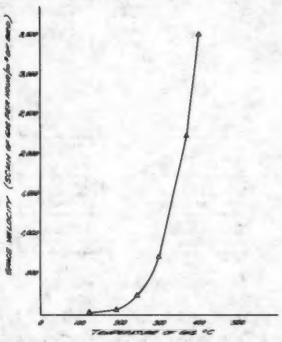
METHOD FOR THE DESULFURIZATION OF HYDROCARBON GAS

Juan A. Villarreal-Trevino, San Nicolás de los Garza; Eugenio Zendejas-Martinez, and Hector Lopez-Ramos, both of Monterrey, all of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Nov. 4, 1983, Ser. No. 549,228

Int. Cl.[4] B01D *53/34*

U.S. Cl. 423—230 20 Claims



1. A method for the desulfurization of sour natural gas containing sulfur contaminants naturally occurring in natural gas which comprises heating the sour natural gas to a desulfurization reaction temperature in the range of 250° C. to 450° C., contacting the heated sour natural gas with a bed of sponge iron to remove at least a portion of the sulfur contaminants to form a sweet natural gas.

4,608,241

PRODUCTION OF PHOSPHORUS AND PHOSPHORIC ACID

James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Continuation-in-part of Ser. No. 503,099, Jun. 10, 1983, which is a division of Ser. No. 428,840, Sep. 30, 1982, Pat. No. 4,451,277, which is a continuation-in-part of Ser. No. 301,378, Sep. 11, 1981, Pat. No. 4,383,847, which is a division of Ser. No. 223,122, Jan. 7, 1981, Pat. No. 4,372,929. This application Apr. 29, 1985, Ser. No. 728,620

Int. Cl.[4] C01B *25/16*

U.S. Cl. 423—317 9 Claims

1. A process for treating phosphorus-containing waste, said process comprised of the following steps:

(a) distilling phosphorus-containing waste in a still to vaporize phosphorus and water and thereby separate the volatile materials from the non-volatile residue;

(b) adding purge gas to the still in step (a);

(c) collecting residue remaining in the still in step (a);

(d) agglomerating residue in step (c) by tumbling with a binder formed by reacting acidic phosphorus compounds with alkaline substances;

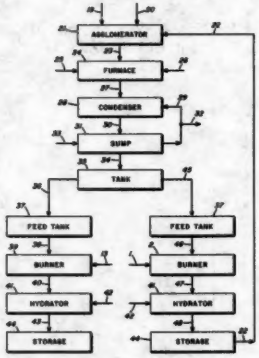
(e) condensing phosphorus and water is step (a) by contacting the gas mixture with water to separate condensable and non-condensable gases;

(f) bleeding off a portion of the water from step (e) and adding it to residue from step (c);

(g) smelting agglomerates formed in step (d) in submerged-arc electric furnace;

(h) condensing phosphorus from step (g) in a surface condenser;

(i) combining phosphorus from step (e) and step (h);



PROCESS FOR MAKING PHOSPHORIC ACID

(j) burning phosphorus in step (i) to form P_2O_5; and

(k) reacting P_2O_5 in step (j) with water to form phosphoric acid solution.

4,608,242

HYDROSILYL-MODIFIED POLYCARBOSILANE PRECURSORS FOR SILICON CARBIDE

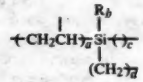
Curtis L. Schilling, Jr., Croton-on-Hudson, N.Y., and Thomas C. Williams, Ridgefield, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 479,745, Mar. 28, 1983. This application Jun. 22, 1984, Ser. No. 623,556

Int. Cl.[4] C01B *31/36*

U.S. Cl. 423—345 **3 Claims**

1. A process for producing silicon carbide ceramic compositions which comprises a one-step, direct pyrolysis in an inert atmosphere of a branched hydrosilyl-modified polycarbonsilane comprising units of the formula



wherein R is a lower alkyl, a is 0 or 1, b is 0–3, c is 0–4, d is 0–4, and a+b+c+d totals 4, with the proviso that, in different units, a, b, c, d, and R may differ, but that, in at least one unit, a+d must total 1 or more and units of the formula

wherein R is defined as above, g is 1–2, e is 0–2, f is 1–3, and g+e+f totals 4.

4,608,243

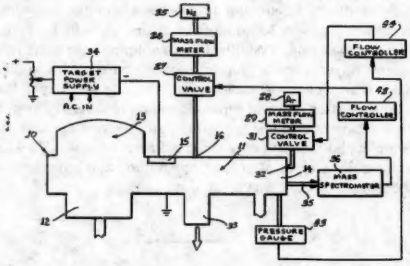
HIGH HARDNESS HAFNIUM NITRIDE

William D. Sproul, Palatine, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 481,952, Apr. 4, 1983, abandoned. This application Oct. 17, 1985, Ser. No. 788,313

Int. Cl.[4] C01B *31/34*; C23C *15/00*

U.S. Cl. 423—409 **8 Claims**



1. A high hardness hafnium nitride having a face centered cubic structure with a cell size of 4.55 to 4.58 A° and a hardness in the range of 2700 to 4200 kilograms per square millimeter for Vickers microindentation hardness.

4,608,244

ACETYLENE BLACK

Isao Sugihara; Akio Nishijima, and Michio Toriguchi, all of Omuta, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Apr. 3, 1985, Ser. No. 719,463

Claims priority, application Japan, Apr. 5, 1984, 59-68276

Int. Cl.[4] C01B *31/02*; C09C *1/48*

U.S. Cl. 423—445 **5 Claims**

1. A method of producing granular acetylene black comprising the steps of

thermally decomposing acetylene gas to obtain acetylene black having a half-width of the 1355 cm^{-1} band in the Raman spectrum of not greater than 55 cm^{-1} and an iodine adsorption of not less than 95 mg/g;

stirring said acetylene black in a wetting agent consisting essentially of ion exchange water to granulate the same;

drying the granulated acetylene black at a temperature below 300° C.; and

selecting particles having a hardness of less than 5 g/particle.

3. An acetylene black product produced according to the process comprising the steps of

thermally decomposing acetylene gas to obtain acetylene black having a half-width of the 1355 cm^{-1} band in the Raman spectrum of not greater than 55 cm^{-1} and an iodine adsorption of not less than 95 mg/g;

stirring said acetylene black in a wetting agent consisting essentially of ion exchange water to granulate the same;

drying the granulated acetylene black at a temperature below 300° C.; and

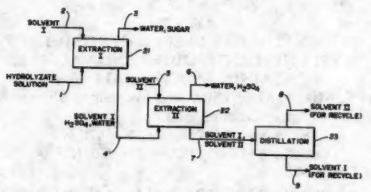
selecting particles having a hardness of less than 5 g/particle.

4,608,245

METHOD OF SEPARATION OF SUGARS AND CONCENTRATED SULFURIC ACID

James L. Gaddy, 964 Arlington Ter., and Edgar C. Clausen, 2425 Sharon St., both of Fayetteville, Ark. 72701

Filed Oct. 17, 1985, Ser. No. 788,397
Int. Cl.[4] C01B *17/74, 17/90;* C13K *1/02;* B01D *59/30*
U.S. Cl. 423—531 9 Claims



1. A method of recovering sulfuric acid from the crude product obtained from the acid hydrolysis of a cellulose-containing material, said method comprising the steps of:

contacting the crude product with a solvent comprising at least 50% of one or more of the C_4–C_7 alcohols and separating said product into a sulfuric acid enriched alcohol phase and a sulfuric acid depleted aqueous phase; and

separating the phases and recovering the sulfuric acid from the sulfuric acid enriched alcohol phase.

4,608,246

TESTING FOR A BLOOD GROUP IMMUNOLOGICAL REACTION

William L. Bayer, Jackson County, Mo.; Frederick V. Plapp, Johnson County, Kans.; Malcolm L. Beck, Johnson County, Kans.; Lyle T. Sinor, Johnson County, Kans., and William M. Coenen, Johnson County, Kans., assignors to Immucor, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 474,129, Mar. 10, 1983, abandoned. This application Sep. 15, 1983, Ser. No. 532,464
Int. Cl.[4] G01N *33/555*
U.S. Cl. 424—11 21 Claims

1. A method of testing for a blood group antigen-antibody immunological reaction, said method comprising:

providing a solid surface capable of adsorbing blood grouping antibodies and supporting an immunological reaction;

contacting said surface with a known blood grouping antibody containing fluid whereby a layer of said antibodies is adsorbed on said surface;

activating an unknown blood sample by treating said sample with an effective quantity of a proteolytic enzyme characterized by the ability to modify red blood cells to enhance their serological activity; and

contacting said surface with said activated blood sample whereby any antigen specific to said antibody will undergo an immune reaction with said antibody and the resulting immunologically adhered red color on said surface will indicate the presence of specific antigens in said unknown blood sample.

20. A method of testing for a blood group immunological reaction, said method comprising the steps of:

providing a solid surface capable of adsorption of anti-human immunoglobulin and supporting an immunological reaction;

attaching to said surface a known antibody;

attaching directly to said antibody coated surface anti-human immunoglobulin;

contacting said surface with an unknown blood sample whereby any antibodies present in said unknown blood sample will undergo immunological reaction and adhere to said surface with the resulting adhered red color indicating the presence of said antibodies.

4,608,247

COMPOSITION FOR BACTERICIDAL TREATMENT OF WATER

Charles F. Heinig, Jr., Warwick, R.I., assignor to George J. LeMire, Cranston, R.I., a part interest

Filed Oct. 24, 1984, Ser. No. 664,205
Int. Cl.[4] A01N *25/26*
U.S. Cl. 424—16 7 Claims

1. A composition for the bactericidal treatment of a stream of water comprising:

a. a particulate silver yielding material comprising:

i. a carrier which has a particle size of between approximately 4 and 20 mesh, a surface area of greater than approximately 150 square inches per gram, and a Mohs scale hardness of greater than 2.5 and which is substantially insoluble in water having a pH of between 5 and 9;

ii. a layer of elemental silver on the surfaces of said carrier, said silver being between approximately 1% and 10% by weight of said silver yielding material; and

iii. the mechanical interaction between adjacent particles of said silver yielding material causing a release of elemental silver into said stream when it is passed therethrough;

b. a particulate filler material intermixed with said silver yielding material, said filler material being substantially insoluble in water having a pH of between 5 and 9, said filler material having a particle size of between approximately 4 and 20 mesh and a Mohs scale hardness of less than 2.5, the volumetric ratio of said filler material to said silver yielding material being between approximately 1:1 and 5:1; and

c. said filler material reducing the rate at which elemental silver is released from said composition to produce a controlled release of said elemental silver when said stream is passed therethrough.

4,608,248

PROCESS FOR TIME-CONTROLLED RELEASE OF ACTIVE INGREDIENTS

Adolf Knecht, Freiburg, and Helmut Augart, Waldkirch, both of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 795,756, Nov. 8, 1985, abandoned, which is a continuation of Ser. No. 391,020, Jun. 22, 1982, abandoned. This application Feb. 24, 1986, Ser. No. 833,430
Int. Cl.[4] A61K *9/22, 9/26*
U.S. Cl. 424—19 2 Claims

1. In a process for controlling the timed release of active material from a retarded active material composition containing polysoluble adjuvant materials which is melt granulated, pressed and tableted, wherein the improvement comprises increasing the rate of release of active material by homogeneously admixing therewith prior to melt-granulating methylcellulose or carboxymethylcellulose at an increasing viscosity of from 0.02 to 40 pa.s.

4,608,249

HYDROPHILIC THERAPEUTIC MATERIAL

Saburo Otsuka; Toshiyuki Yoshikawa; Shoichi Tokuda, and Yuusuke Ito, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd. and Toa Eiyo Litd., both of, Japan

Filed Nov. 2, 1982, Ser. No. 438,422
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.[4] A61L *15/03;* A61K *31/79;* C08F *220/12*
U.S. Cl. 424—28 13 Claims

1. A hydrophilic therapeutic material comprising a backing and a drug-containing patching layer formed thereon directly or indirectly, wherein said patching layer comprises a copolymer of 5 to 75% by weight of an acrylic or methacrylic ester having an ether group in the molecule and having a glass

transition temperature of from −10° C. to −70° C., 85 to 15% by weight of an alkyl acrylate or alkyl methacrylate, each alkyl group having from 4 to 13 carbon atoms, and 10 to 50% by weight of a functional monomer copolymerizable therewith.

4,608,250

QUATERNIZED POLYMERS; PROCESS FOR PREPARING THE SAME; AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Bernard Jacquet, Antony, and Gérard Lang, Epinay sur Seine, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 101,562, Dec. 10, 1979, Pat. No. 4,381,919, which is a continuation-in-part of Ser. No. 899,467, Apr. 24, 1978, Pat. No. 4,197,865, which is a continuation of Ser. No. 702,924, Jul. 6, 1976, abandoned. This application May 2, 1983, Ser. No. 490,852

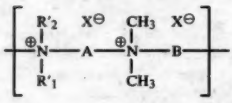
Claims priority, application Luxembourg, Jul. 4, 1975, 72901; Nov. 13, 1975, 73792

The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.

Int. Cl.⁴ A61K *7/06, 7/09;* **A45D** *7/00*

U.S. Cl. 424—71 **2 Claims**

1. A process for the premanent waving of hair comprising in a first stage reducing the S—S bonds of the keratin of hair by applying to the hair a composition comprising a reducing agent present in an amount effective to reduce a sufficient number of S—S bonds of keratin of the hair and a quaternized polymer having recurring units of the formula

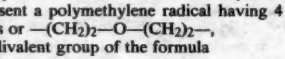


wherein

R'_2 is an aliphatic radical having a maximum of 20 carbon atoms,

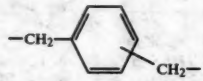
R'_1 is alkyl containing 2–20 carbon atoms, cycloalkyl having 5 or 6 carbon atoms or phenylalkyl wherein the alkyl moiety has 1–3 carbon atoms or R'_1 and R'_2 together represent a polymethylene radical having 4 to 5 carbon atoms or $—(CH_2)_2—O—(CH_2)_2—$,

A is a divalent group of the formula



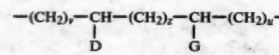
wherein x, y and t are whole numbers ranging from 0 to 11 such that the sum of x, y and t is greater than or equal to 0 and less than 18, and E and K represent hydrogen,

B represents a divalent group of the formula



(o-, m- or p-),

$—CH_2—CHOH—CH_2—$, $—(CH_2)_n—O—(CH_2)_n—$ or



wherein D and G represent hydrogen, v, z and u are whole numbers ranging from 0 to 11, with two of v, z and u simultaneously being capable of being 0, such that the sum of v, z and u is greater than or equal to 1 and lower than 18, and such that the sum of v, z and u is greater than 1 when the sum of x, y and t is equal to 0, and n is a whole number equal to 2 or 3, and

$X^{\ominus}$ is an anion derived from an organic or mineral acid,

said quaternized polymer being present in an amount between 0.25 and 10 percent by weight of said composition, and

in a second stage reforming said bonds by applying an oxidizing composition.

4,608,251

LHRH ANALOGUES USEFUL IN STIMULATING ANTI-LHRH ANTIBODIES AND VACCINES CONTAINING SUCH ANALOGUES

Abdus S. Mia, Fairless Hills, Pa., assignor to Pitman-Moore, Inc., Washington Crossing, N.J.

Filed Nov. 9, 1984, Ser. No. 670,469

Int. Cl.⁴ A61K *39/395, 37/24;* **C07K** *7/06*

U.S. Cl. 424—85 **29 Claims**

1. An immunogen vaccine which induces in a manmal production of antibodies against LHRH, which vaccine comprises a water in oil emulsion, the water phase comprising conjugate between a protein and a biologically effective amount of a peptide selected from the group consisting of:

$Lys\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Leu\text{-}Arg\text{-}Pro\text{-}Gly\text{-}NH_2$,

or

$Cys\text{-}Lys\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Leu\text{-}Arg\text{-}Pro\text{-}Gly\text{-}NH_2$,

or mixtures of

$Lys\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Leu\text{-}Arg\text{-}Pro\text{-}Gly\text{-}NH_2$,

and

$Cys\text{-}Lys\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Leu\text{-}Arg\text{-}Pro\text{-}Gly\text{-}NH_2$.

11. A method of inducing in a mammal the production of antibodies to LHRH which comprises administering to the mammal an immunogen vaccine which induces in the mammal production of antibodies against LHRH, which vaccine comprises a water in oil emulsion, the water phase comprising a conjugate between a protein and a biologically effective amount of a peptide selected from the group consisting of:

$Lys\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Leu\text{-}Arg\text{-}Pro\text{-}Gly\text{-}NH_2$,

or

$Cys\text{-}Lys\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Leu\text{-}Arg\text{-}Pro\text{-}Gly\text{-}NH_2$,

or mixtures of

$Lys\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Leu\text{-}Arg\text{-}Pro\text{-}Gly\text{-}NH_2$,

and

$Cys\text{-}Lys\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Leu\text{-}Arg\text{-}Pro\text{-}Gly\text{-}NH_2$.

4,608,252

CHLORAMPHENICOL DERIVATIVES ANTIGENS AND ANTIBODIES

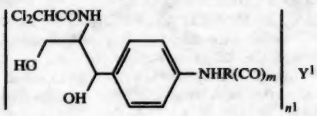
Pyare Khanna, San Jose; Evan S. Snyder, Mountain View, and Prithipal Singh, Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 676,689, Nov. 30, 1984, Pat. No. 4,544,765, which is a division of Ser. No. 256,761, Apr. 23, 1981, Pat. No. 4,489,156. This application Sep. 27, 1985, Ser. No. 781,075

Int. Cl.⁴ A61K *39/00;* **G01N** *53/00*

U.S. Cl. 424—85 **1 Claim**

1. Antibodies prepared in response to an antigen of the formula:



wherein:

R is a saturated aliphatic linking group of from 2 to 6 carbon atoms having from 0 to 1 oxo-carboxyl groups at its terminus bonded to nitrogen;

Y^1 is a poly(amino acid); and

n^1 is one to the molecular weight of Y^1 divided by 2000.

4,608,253

PROCESS FOR REMOVING IMMUNE COMPLEX IN BLOOD BY USE OF THE IMMOBILIZED PEPSIN

Haruo Ohnishi, Funabashi; Hiroshi Kosuzume, Yokohama; Yasuo Suzuki, Kawaguchi, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP82/00212, § 371 Date Nov. 15, 1983, § 102(e) Date Nov. 15, 1983, PCT Pub. No. WO83/04180, PCT Pub. Date Dec. 8, 1983

PCT Filed May 31, 1982, Ser. No. 556,709

Int. Cl.[4] A61K *37/54*

U.S. Cl. 424—94 20 Claims

1. A process for removing immune complexes from blood or plasma, comprising contacting blood or plasma containing immune complexes with a material comprising an effective agent immobilized on a pharmaceutically acceptable carrier, said agent being selected from the group consisting of pepsin and an enzyme derived from mammalian leukocytes, and recovering said blood or plasma freed of said immune complexes, said enzyme having the following properties:

(a) molecular weight of about 35,000 to 41,000;

(b) isoelectric point of pH 2.5 to 3.5;

(c) maximum absorption at 278 nm;

(d) positive ninhydrin reaction;

(e) readily soluble in water and insoluble in ether and chloroform; and

(f) white powdery appearance.

4,608,254

METHOD FOR THE PRODUCTION OF THERAPEUTICALLY ADMINISTRABLE PLASMA DERIVATIVES FILLED IN FINAL CONTAINERS

Anton Philapitsch, Ebenfurt, and Yendra Linnau, Vienna, both of Austria, assignors to Immuno Aktiengesellschaft fur chemisch-medizinische Produkte, Vienna, Austria

Filed Mar. 7, 1984, Ser. No. 587,223

Claims priority, application Austria, Mar. 16, 1983, 932/83

Int. Cl.[4] A61K *35/16*

U.S. Cl. 424—101 5 Claims

1. In a method for the production of therapeutically administrable plasma derivatives filled in final storage containers, which are free of prekallikrein activator, hypotensively active constituents and other undesired pharmacologically active substances, by stepwise enrichment of plasma protein and sterile filtration, said method comprising adding C_1-esterase inhibitor during the production process of said plasma derivatives to form a thermally stable PKKA/C_1INA complex, filling said plasma derivatives in final storage containers, and subjecting said plasma derivatives filled in final storage containers to a thermal virus inactivation treatment.

4,608,255

BIOCOMPATIBLE METHOD FOR IN SITU PRODUCTION OF FUNCTIONAL PLATELETS AND PRODUCT PRODUCED THEREBY LACKING IMMUNOGENICITY

Richard A. Kahn, St. Louis, and Glenn E. Rodey, Chesterfield, both of Mo., assignors to American National Red Cross, Washington, D.C.

Filed Jan. 31, 1985, Ser. No. 696,657

Int. Cl.[4] A61K *35/14*

U.S. Cl. 424—101 7 Claims

1. An isolated, immunogen-free, transfusible platelet suspension in an enclosed, inert, biocompatible container permeable to ultraviolet radiation, said platelet suspension being biologically functional and having been rendered free of immunogenicity in situ by treatment with an effective amount of ultraviolet radiation external to and permeable through said container.

4. A method of in situ producing functional platelets lacking immunogenicity in a container containing platelets comprising collecting a platelet suspension in an inert, biocompatible, sterile, closed container made of a material suitable for passage of ultraviolet radiation therethrough and then irradiating said platelet suspension with an external source of ultraviolet radiation capable of penetrating through said container for a time and at a dosage level sufficient to inactivate immunogenic factors present in said suspension without affecting platelet function.

4,608,256

METHOD OF TREATING CACHEXIA

Chukei Komakine, 13-10, Azasugidaira, Taira, Iwaki-shi, Fukushima-ken, Japan

Continuation-in-part of Ser. No. 503,692, Jun. 13, 1983, abandoned. This application Mar. 29, 1985, Ser. No. 717,590

Claims priority, application Japan, Oct. 1, 1982, 57-170923

Int. Cl.[4] A61K *33/26*

U.S. Cl. 424—147 2 Claims

1. A method for treating humans afflicted with cachexia comprising orally administering to a human afflicted with cachexia an amount of an inorganic composition effective to treat said cachexia, said inorganic composition being prepared by mixing 8 parts by weight of crystalline ferrous sulfate heptahydrate with 1 to 2 parts by weight of flyash; heating the mixture for about one hour at a temperature of 65° to 85° C. to thereby cause granules of said mixture to shatter and to form an almost neutralized mixture; and mechanically pulverizing said shattered granules into a finely powdered inorganic composition.

4,608,257

COMPOSITION AND METHOD FOR TREATING HEAT STRESS

Robert G. Teeter, Stillwater, Okla., assignor to Board of Regents for Oklahoma State University, Stillwater, Okla.

Filed Jan. 3, 1984, Ser. No. 567,507

Int. Cl.[4] A61K *33/02, 33/14*

U.S. Cl. 424—166 18 Claims

1. A method of treating heat stress in poultry comprising the step of supplementing the diet of said poultry with from about 0.3 weight percent to about 3 weight percent of a hydrogen ion donor.

4,608,258

MEDICAMENT FOR TREATMENT OF DIARRHEA

Kiyoyuki Yamanaka, Moriguchi, Japan, assignor to Taiko Pharmaceutical Co., Ltd., Suita, Japan

Filed Aug. 17, 1983, Ser. No. 523,885

Int. Cl.[4] A61K *35/78*

U.S. Cl. 424—195.1 1 Claim

1. A diarrhea-treating medicament for treating various diseases with diarrhea comprising a diarrhea-treating effective

amount of creosote and a pharamceutically acceptable carrier, wherein the medicament is contained in a capsule.

4,608,259

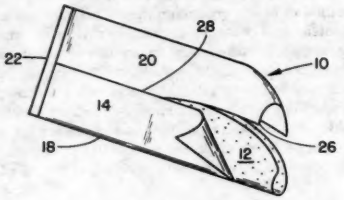
POCKET WRAP

Jeffery J. Cortopassi, Santa Ana, Calif., assignor to Taco Bell, Irvine, Calif.

Continuation of Ser. No. 673,579, Nov. 21, 1984, abandoned. This application Oct. 28, 1985, Ser. No. 793,445

Int. Cl.[4] B65D *30/00, 85/00*

U.S. Cl. 426—115 6 Claims



1. A simple and versatile pocket wrap for a comestible product which is frequently hand held during consumption, comprising:

a. a substantially rectangular pocket adapted to enclose a comestible product which is frequently hand held during consumption, formed by front and back sheets which are joined along both a first side edge and a bottom edge, and which are openable and detached along both a second side edge and a top edge, said open second side and top edges of the pocket enabling a comestible product to be conveniently inserted into the pocket, and also allowing the comestible product to extend from the pocket for consumption while still being wrapped therein and hand held by a consumer, with the length of the top and bottom edges generally defining the length of the rectangular pocket and the length of the first and second side edges generally defining the width of the rectangular pocket;

b. a substantially rectangular overwrap sheet formed integrally with said pocket back sheet along a fold line and extending upwardly from said pocket, said overwrap sheet having a length and width substantially equal to the length and width of the rectangular pocket and being designed to be folded downwardly along said fold line to substantially completely overlie said pocket front sheet after a comestible product is inserted into the pocket, thereby wrapping and packaging the comestible product in a manner suitable for take out, and also enabling the product to be consumed by being relocated in the pocket so as to extend from said open second side or top edge; and

c. said front and back sheets and said overwrap sheet being formed from one integral substantially rectangular sheet of paper with said front sheet, said back sheet and said overwrap sheet each comprising approximately one third of the area of the rectangular sheet, with the rectangular sheet being folded initially along said bottom edge joinder of said front and back sheets, and then folded a second time along said first side edge joinder of said front and back sheets and continuing up along said first side edge into the overwrap sheet, with a short inwardly extending tab being formed along said first side edge and extending from the overwrap sheet in which the tab is one sheet thick to the first side edge joinder of the front and back sheets where the tab is two sheets thick.

4,608,260

PROCESS FOR CONTROLLING THE COOKING PROCESS IN A STEAM PRESSURE COOKER

Wolfram K. Andre, Aichwald, Fed. Rep. of Germany, assignor to Kurt Wolf & Co. KG, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,317

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323399

Int. Cl.[4] A47J *27/62;* H05B *1/02*

U.S. Cl. 426—233 9 Claims

1. Process for adjusting a preset cooking time for a cooking process for cooking food materials in a steam pressure cooker heated by a heating means controlled by a control circuit in which the temperature of said steam pressure cooker and its food materials is detected at times during the cooking process and utilized by said control circuit to regulate the heat output of said heating means and in which a cooking time (tg) is preset by an adjustable timing means and adjusted by said control circuit dependent upon said food materials, comprising:

measuring the temperature of said cooker during a heating phase and determining a slope ($\Delta Tx/t$) of a temperature-time curve ($T=f(t)$) during said heating phase, said slope of said temperature-time curve characteristic of said cooking process and said food materials;

determining a time interval (tvx) based upon said slope ($\Delta Tx/t$), a function ($\Delta T/t=f(M)$) characteristic of a cooking system comprising said heating means, said steam pressure cooker, and a quantity of liquid food material (M) in equivalent water units (WE), and a function $tv=f(M)$ characteristic of said cooking system, said time interval (tvx) increasing as said slope ($\Delta Tx/t$) decreases;

shortening said preset cooking time (tg) by said time interval (tvx) to determine a shortened cooking time (tg'); and

deactivating said heating means after said shortened cooking time (tg') has elapsed.

4,608,261

METHOD AND APPARATUS FOR PRODUCING A PUFFED FOODSTUFF

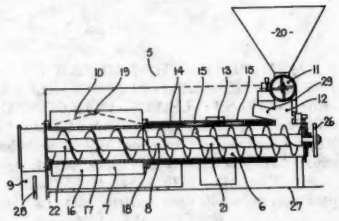
Ross A. MacKenzie, Auckland, New Zealand, assignor to New Zealand Government Property Corporation, Wellington, New Zealand

Filed Oct. 24, 1984, Ser. No. 664,430

Claims priority, application New Zealand, Nov. 4, 1983, 206150

Int. Cl.[4] A23L *1/18, 3/18*

U.S. Cl. 426—242 10 Claims



8. A method of producing a puffed foodstuff from a raw food material in particulate form, said method comprising the steps of: conveying the particulate raw food material by a screw-conveying means through a preheating chamber and subjecting the food material to preheating therein; subsequently conveying the preheated raw food material through a main processing chamber and subjecting the food material to further heating by microwave energy to puff the food material and delivering the resulting puffed foodstuff to an outlet, said screw-conveying means being of a material substantially transparent to micro-waves where the conveying means passes through the main processing chamber, the pitch of said screw-

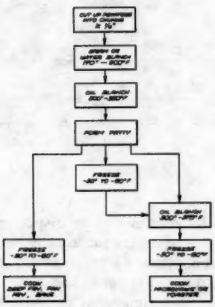
conveying means being wider where said conveying means passes through said main processing chamber than the pitch where the screw-conveying means passes through said preheating chamber.

4,608,262

METHOD OF MAKING FROZEN POTATO PATTIES AND THE PRODUCTS FORMED THEREBY

Sherry A. Galland, Caldwell, Id., assignor to J. R. Simplot Company, Boise, Id.

Filed Jan. 3, 1985, Ser. No. 688,574
Int. Cl.[4] A23L *1/217*
U.S. Cl. 426—243 23 Claims



1. A method of preparing a potato patty for freezing and storage comprising:

a. cutting up potatoes into relatively large chunks having a predominant minimum dimension of not less than about ¼ inch;

b. cooking the potato chunks in an aqueous media selected from the group consisting of steam and water;

c. further cooking the potato chunks in oil;

d. mixing the potato chunks cooked in oil with an aqueous solution of starch, gum or mixtures thereof; and

e. then forming the mixture into a potato patty.

4,608,263

METHOD FOR MAKING FLAVORED DIPEPTIDE SWEETENED COMESTIBLE

Ralph M. Bergin, Wonder Lake; Emanuel E. Katz, Palatine, and Warren A. Widicus, Bartlett, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Sep. 11, 1984, Ser. No. 649,554
Int. Cl.[4] A23L *1/164*
U.S. Cl. 426—303 30 Claims

1. A method for making a sweet, flavored ready-to-eat cereal comprising the steps of:

(a) heating an edible fatty material having a Wiley Melting Point in the range of about 20° C. to 45° C. and an iodine value of less than about 40 to a temperature at which it is liquid;

(b) dispersing a finely ground solid dipeptide sweetner in the range of about 25 microns to 500 microns in diameter into said heated fatty material unitl an amount of the dipeptide sweetener in the range of about 0.5% to 7.0% based on the weight of the fatty material has been dispersed into the heated fatty material;

(c) dispersing an effective amount of an oil dispersible flavoring material containing a carbonyl flavoring compound into the heated fatty material;

(d) applying the dispersion of dipeptide sweetener and flavoring material onto a ready-to-eat cereal base heated to a temperature of at least about 25° C. above the melting point of the edible fatty material and in a coating in a quantity sufficient to provide an amount of dipeptide sweetener on the cereal base in the range of about 0.05% to 0.5% based on the weight of the cereal base; and

(e) cooling the sweetened, flavored ready-to-eat cereal base to a temperature at which the fatty material is solid.

4,608,264

PRETREATMENT OF FRIED FOOD PRODUCTS WITH OIL CONTAINING EMULSIFIERS

Lucy L. Fan, Irving, Tex., and Javier A. Arce, LaPaz, Bolivia, assignors to Frito-Lay, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 575,278, Jan. 30, 1984, abandoned. This application Sep. 24, 1984, Ser. No. 653,702
Int. Cl.[4] A23L *1/01, 1/217*
U.S. Cl. 426—438 15 Claims

1. A method for preparing fried starch-containing sliced or dough-based snack foods comprising washing starch-containing vegetable food pieces in a vegetable oil containing about 0.05–1% (w/v) of a food grade emulsifier, at a temperature below the gelatinization temperature of the surface starch, and then frying the washed pieces.

4,608,265

IMITATION CHEESE PRODUCTS CONTAINING HIGH AMYLOSE STARCH AS PARTIAL OR TOTAL CASEINATE REPLACEMENT

Gary A. Zwiercan, Knutsford, England; Norman L. Lacourse, Plainsboro, and Julianne M. Lenchin, Cranbury, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 480,058, Mar. 29, 1983, abandoned. This application Mar. 8, 1985, Ser. No. 709,946
The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.
Int. Cl.[4] A23C *20/00*
U.S. Cl. 426—582 23 Claims

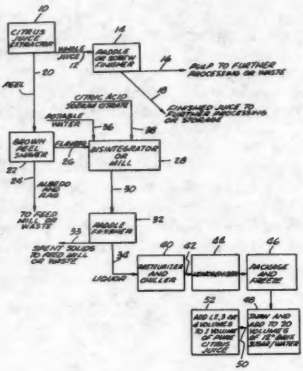
1. An imitation cheese product consisting essentially of water, an edible vegetable fat or vegetable oil, cheese additives, and at least one edible caseinate, wherein the improvement comprises the replacement of 25 to 50% of the caseinate by an edible pregelatinized modified starch having an amylose content of at least 40% by weight, the modified starch being selected from the group consisting of a derivatized starch, a converted starch, a converted and derivatized starch, and a crosslinked starch; the derivatized starch being prepared by treatment of the starch with up to about 25% propylene oxide, up to about 5% succinic anhydride, up to about 10% octenylsuccinic anhydride, a sufficient amount of acetic anhydride to provide a maximum of about 6% bound acetyl, or a sufficient amount of sodium or potassium orthophosphate, sodium or potassium tripolyphosphate, or a mixture thereof to provide a maximum of about 0.8% bound phosphate, calculated as phosphrous; the converted starch being selected from the group consisting of a fluidity starch prepared by acid- or enzyme-conversion of the starch, an oxidized starch prepared by treatment of the starch with less than about 5.5% active chlorine, and a dextrin having a calcium chloride water fluidity of less than about 50 prepared by pyrodextrinization of the starch; the starch being pregelatinized before or after modification of the starch by derivatization, conversion, derivatization and conversion, or crosslinking; the treatment percentages being by weight based on the starch; the cheese product containing the starch replacement being functionally equivalent to the cheese containing no caseinate replacement.

4,608,266

PROCESS FOR FORMING A CITRUS JUICE EXTENDER

Donald E. Epperson, Chino; Orvin B. Curley, Ontario, and Horton E. Swisher, Upland, all of Calif., assignors to Brown International Corporation, Covina, Calif.

Continuation of Ser. No. 499,346, May 31, 1983, abandoned.
This application Feb. 11, 1985, Ser. No. 700,061
Int. Cl.[4] A23L *2/02*
U.S. Cl. 426—599 **9 Claims**


CITRUS JUICE EXTRACTOR
PEDDLE OR SIMILAR FINISHER
PULP TO FURTHER PROCESSING OR WASTE
CITRIC ACID SODIUM CITRATE
FINISHED JUICE TO FURTHER PROCESSING OR STORAGE
BROWN MILL CORPORATION
DISINTEGRATOR OR MILL
ALBEDO AND PULP
TO FEED MILL OR WASTE
PEDDLE FINISHER
SPENT SOLIDS TO FEED MILL OR WASTE
LIQUOR
DISCHARGE AND FINISH
ADD 1.5 LBS. OF SODIUM CITRATE TO 1 VOLUME OF FINISHED CITRUS JUICE
DILUTE AND ADD TO 20 VOLUMES OF 12° BRIX SUGAR/WATER

1. A process for forming a citrus extender substantially from natural components of citrus fruit, comprising the steps of:

separating flavedo from the peel of the citrus fruit by shaving in order to assure recovery and separation of the desirable components of the flavedo from the albedo, pulp and other components of the citrus fruit in order to recover substantially all of its essential oil, color and cloud-forming components from the flavedo.

comminuting the flavedo into particles suitable for being placed in colloidal suspension,

combining the comminuted flavedo with an acidifying agent and with a minimum amount of water just sufficient to maintain liquidity of the combination,

finishing the combination to remove solids and form a resultant finished liquor extender containing substantially all available essential oil, color and cloud forming components of the comminuted flavedo for enhancing natural color, flavor and cloud of a subsequently extended juice product, and

storing the extender for subsequent combination with a sweetener and water to thereupon form a diluted and sweetened extender suitable for blending with an initial juice to form a citrus extended juice product.

4,608,267

LECITHIN-CONTAINING FOOD PRODUCT

Christian E. Dutilh, Dordrecht, Netherlands, assignor to Thomas J. Lipton Inc., Englewood Cliffs, N.J.

Filed Nov. 27, 1984, Ser. No. 675,198
Claims priority, application United Kingdom, Nov. 29, 1983, 8331808
Int. Cl.[4] A23J *7/02*
U.S. Cl. 426—662 **15 Claims**

1. A food product which includes lecithin finely distributed therein, which lecithin consists essentially of

at least 25% by weight of phosphatidyl choline,

0–20% by weight of phosphatidyl ethanolamine, and

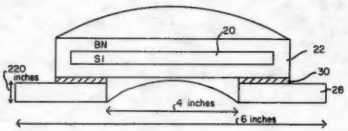
fatty acid residues, of which residues at least 10% by weight are unsaturated fatty acid residues, which product includes at least 5% by weight of phosphatidyl choline, calculated on the dry contents of the product, wherein the weight ratio of the phosphatidyl choline and phosphatidyl ethanolamine contents of the product is at least 3, the balance consisting of edible material.

4,608,268

PROCESS FOR MAKING A MASK USED IN X-RAY PHOTOLITHOGRAPHY

Alexander R. Shimkunas, Palo Alto, Calif., assignor to Micronix Corporation, Los Gatos, Calif.

Filed Jul. 23, 1985, Ser. No. 758,596
Int. Cl.[4] B05B *5/00*
U.S. Cl. 427—8 **4 Claims**



4. A process for determining the displacement of a wafer due to bowing from a reference plane comprising the steps of:

placing an unbowed wafer in proximity to a capacitive probe, the distance between said capacitive probe and said wafer being determined in response to the capacitance measured by said capacitive probe;

forming a layer of material on one side of said wafer, the wafer bowing in response to said layer of material;

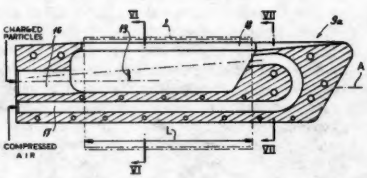
placing said wafer and said layer of material in proximity to said capacitive probe, the distance between said probe and said wafer being determined in response to the capacitance measured by said capacitive probe, the difference in the distance between said capacitive probe and said wafer when said wafer is bowed and when said wafer is unbowed representing displacement due to bowing.

4,608,269

ELECTROSTATIC STRIPING OF THREE-PART METAL-CAN SEAMS

Jean J. Celant, 20, route de Ste-Cecile, Serignan Du Cantat (Vaucluse), and Francois Bochaton, Cluny, both of France, assignors to W.C.C.E. World Can and Cap Engineering, Macon and Jean Jacques Celant, Serignan Du Cantat, both of, France

Filed Dec. 13, 1984, Ser. No. 681,496
Claims priority, application France, Dec. 15, 1983, 83 20419
Int. Cl.[4] B05B *5/02, 7/14;* B65D *8/22*
U.S. Cl. 427—28 **14 Claims**



1. A method of striping a surface, the method comprising the steps of:

positioning a nozzle having an elongated groove adjacent the surface with the groove opening immediately along the region of the surface to be striped;

imparting to the surface surrounding the nozzle a predetermined potential level;

introducing a stream of dry particles into at least one end of the groove in a predetermined direction at least generally parallel to the groove and to the region to be striped;

charging the particles relative to the potential level of the surface being such that the particles are attracted to the surface; and

introducing a stream of air under pressure into the end of the groove opposite the one end of the groove in a direction generally opposite to the predetermined direction and thereby deflecting the particle stream transversely from the groove toward the region.

9. An apparatus for striping a surface, the apparatus comprising:

a nozzle having an elongated groove and positionable adjacent the surface with the groove opening immediately at the region of the surface to be striped;

means for imparting to the surface surrounding the nozzle a predetermined potential level;

means for introducing a stream of dry particles into at least one end of the groove in a direction at least generally parallel to the groove and to the region to be striped;

means for charging the particles relative to the potential level of the surface such that the particles are attracted to the surface; and

means for introducing a stream of air under pressure into the opposite end of the groove in generally the opposite direction and thereby deflecting the particle stream transversely from the groove toward the region.

4,608,270
ACYLAMINO SILICON COMPOUNDS, THEIR USE AND PREPARATION

Padmakumari J. Varaprath, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 25, 1985, Ser. No. 791,484
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—35 **35 Claims**

1. An organosilicon compound containing at least one silicon-bonded acylamino-substituted hydrocarbon radical having the formula —QNAQ'NAZ, wherein Z denotes H or R, R denotes a monovalent hydrocarbon radical, Q and Q' denote divalent hydrocarbon radicals, A denotes an acyl radical having the formula

$$CH_2{=}\overset{|}{C}BCO,$$

and B denotes H or CH_3, any remaining silicon-bonded radicals therein being selected from the group consisting of organic radicals and divalent oxygen atoms linking silicon atoms.

4,608,271
METHOD FOR THE MANUFACTURE OF METAL SILICIDE LAYERS BY MEANS OF REDUCED PRESSURE GAS PHASE DEPOSITION

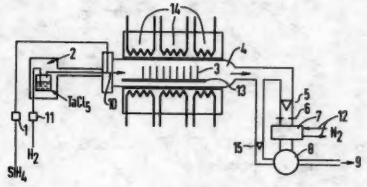
Konrad Hieber, Bernau; Manfred Stolz, Munich, and Claudia Wieczorek, Ottobrunn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 714,850
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3413064
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—38 **9 Claims**

1. A method for the deposition of a silicide layer of a high melting metal onto a substrate of silicon and/or silicon dioxide which comprises:

pyrolytically decomposing gases including a decomposable silicon containing hydrogen compound, or a halogenated silane, and a metal halide to form a reaction mixture in a reaction zone,

depositing a metal silicide from said reaction mixture from the gas phase at reduced pressure, and

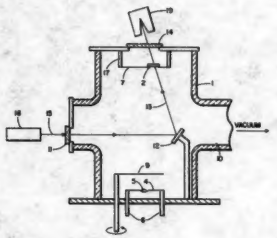


during the decomposition of the gases and deposition of the metal silicide, maintaining the gas pressure in the reaction zone in the range between 1.3×10^{-3} to 5×10^{-2} mbar by means of a turbomolecular pump.

4,608,272
METHOD OF REDUCING OPTICAL COATING ABSORPTANCE

James M. Rowe, Torrance; Paul Kraatz, and Samuel J. Holmes, both of Redondo Beach, all of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Filed Oct. 20, 1980, Ser. No. 198,602
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—53.1 **9 Claims**



1. The method of producing a low absorptance optical coating on an optical substrate, comprising vacuum depositing a thin film of optical coating material on a surface of a substrate while simultaneously irradiating said surface with a beam of light radiation having a wavelength corresponding to that at which the low absorptance is desired and having a power sufficient to cause the desired effect.

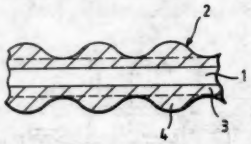
4,608,273
OPTICAL FIBRES

Roger J. Brambley, Great Dunmow, England, assignor to Standard Telephones and Cables Public Limited Company, London, England

Filed Jul. 3, 1985, Ser. No. 751,379
Claims priority, application United Kingdom, Aug. 2, 1984, 8419774
Int. Cl.⁴ B05D *3/06, 3/02*
U.S. Cl. 427—54.1 **6 Claims**

1. A method of providing an optical fibre with a coating which varies in thickness along the length of the optical fibre, including steps of applying a first coating layer to the optical fibre, subsequently applying a layer of a liquid coating material to said first coating layer on the optical fibre, permitting the liquid coating material to form into beads on said first coating

layer on the optical fibre and curing the coating material whereby to maintain the beaded structure, said first coating



layer serving to ensure the presence of a minimum coating thickness on the optical fibre.

4,608,274

METHOD OF MANUFACTURING CIRCUIT BOARDS

Jack Wooten, Mountain View, Calif., assignor to Faultless PCBS, Redwood City, Calif.

Filed Aug. 6, 1982, Ser. No. 405,887

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—96 **7 Claims**

SELECT AND DRILL BASE
DEPOSIT LAYER OF CU ON BASE AND IN HOLES
APPLY LIFT RESIST TO OUTLINE THE CIRCUIT ON BASE
APPLY ETCH RESIST TO COVER CIRCUIT LEAVING PAD AREAS UNCOVERED
DEPOSIT COPPER LAYER ON PAD AREA
DEPOSIT TIN-LEAD LAYER ON COPPER LAYER AT PAD AREA
REMOVE TOP RESIST
ETCH AWAY EXCESS COPPER
REMOVE BOTTOM RESIST
APPLY SOLDER MASK

1. In a process of manufacturing a circuit board the steps of selecting a base panel of insulative material, drilling holes through said panel at predetermined areas, depositing a layer of copper on both sides of said base panel and in the walls defining said holes, preparing a screen with a negative image of the desired circuit thereon for each side of said panel, screening a first resist onto each side of said panel to form a positive circuit image thereon, heating said panel to solidify the resist image, preparing a screen with a positive image of the pad areas for each side of the panel, screening a second resist onto each side of the panel to cover the positive circuit images thereon and to cover all other parts of the panel except the pad areas, heating the panel to solidify the resist, depositing a layer of copper on the panel at each pad area, depositing a tin/lead layer above the copper layer at each pad area, removing the top resist on each side of the panel while leaving the positive circuit images of first resist in place and exposing the panel around the positive circuit images, etching away the excess copper on said panel, and removing said bottom resist to expose the circuit outlined therebelow in copper on both sides of said panel.

4,608,275

OXIDIZING ACCELERATOR

Peter E. Kukanskis, Woodbury; John J. Grunwald, New Haven, and David Sawoska, Waterbury, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Continuation-in-part of Ser. No. 510,333, Jul. 1, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,981

Int. Cl.[4] C23C *18/30*

U.S. Cl. 427—98 **14 Claims**

1. In a method of electroless deposition of metal on a substrate surface, wherein the substrate surface is treated in a one-step catalyst activation process with a sol composition formed from palladium and tin compounds to deposit on said surface metal comprised of palladium, catalytically active to the electroless deposition of metal, protected by compounds comprised of stannous tin compounds; followed by treatment of said surface with an accelerator to eliminate the protective effect of said compounds comprised of stannous tin compounds; and then followed by immersion of said activated and accelerated substrate in an electroless metal depositing solution; the improvement comprising contacting said activated substrate with an accelerator comprised of an alkaline solution containing an oxidizing agent capable of oxidizing stannous tin to stannic tin, the amount of said oxidizing agent in said solution being sufficient to eliminate the protective effect of said compounds comprised of stannous tin compounds and increase the catalytic activity to electroless metal deposition of said deposited metal comprised of palladium on said substrate surface.

4,608,276

MANUFACTURING OPTICAL FIBRE

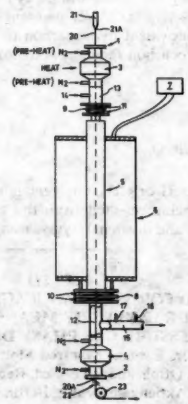
John G. Lamb, and Terence M. McHugh, both of Harlow, England, assignors to Standard Telephones and Cables Public Limited Company, London, England

Filed May 21, 1985, Ser. No. 736,327

Claims priority, application United Kingdom, Jun. 1, 1984, 8414054

Int. Cl.[4] C03C *25/02*; B05D *5/06*

U.S. Cl. 427—163 **6 Claims**



1. A method of manufacturing an optical fibre comprising drawing the fibre through an on-line process chamber to physically and/or chemically change the surface of the fibre within the chamber, and sealing the atmosphere within the chamber at least at one end of the chamber by a seal into which a sealing gas is introduced and so controlled as to prevent the process gases escaping from the chamber without the fibre touching the walls of the seal and without vibrating the fibre.

4,608,277

ENCAPSULATED SALTS OF SPARING SOLUBILITY IN WATER, THEIR PREPARATION AND THEIR USE

Ulrich Greiner, Schöneck; Karl-Heinz Keil, Hanau-Mittelbuchen; Rüdolf Heinrich, and Konrad Albrecht, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Casella Aktiengesellschaft, Frankfort am Main, Fed. Rep. of Germany

Division of Ser. No. 648,123, Sep. 6, 1984, Pat. No. 4,547,429. This application Aug. 2, 1985, Ser. No. 761,909

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333654

Int. Cl.[4] B01J *13/02*

U.S. Cl. 427—213.3 8 Claims

1. In the process for the production of microcapsules of a solid substance being insoluble in water whereby a mixture of the substance to be microencapsulated and a polyurethane prepolymer containing free isocyanate groups is emulsified in water in the presence of a protective colloid and then reacting the polyurethane prepolymer of the mixture with a diamine or a polyamine with vigorous mixing, whereby from the polyurethane prepolymer and the diamine or polyamine a high molecular weight polyurethane is formed which encapsulates the substance to be encapsulated and the microcapsules formed are separated off,

the improvement comprises that the substance to be encapsulated is a salt of sparing solubility in water and the mixture contains the salt of sparing solubility in water and the polyurethane prepolymer in a weight relation of from 83:17 to 28:72 and that the polyurethane prepolymer contains 20 to 70 mole % of free isocyanate groups and that the polyurethane prepolymer is reacted with 10 to 100% of the equivalent amount of a diamine or a polyamine at temperatures of 0° to 80° C. and that the aqueous phase contains an electrolyte having a monovalent to trivalent cation selected from the first three groups of the periodic table, and from a monovalent to trivalent acid, in a concentration of 0.25% up to the saturation concentration, but not more than 50%.

4,608,278

SMALL PARTICULE FORMATION AND ENCAPSULATION

Sylvan G. Frank, Columbus, Ohio; Arne F. Brodin, Sodertalje, Sweden; Chih-Ming J. Chen, East Syracuse, N.Y., and Siriporn Panthuvanich, Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 506,599, Jun. 22, 1983, abandoned. This application Jun. 15, 1984, Ser. No. 621,132

Int. Cl.[4] B01J *13/02*

U.S. Cl. 427—213.35 10 Claims

1. A process for encapsulating a weakly acidic organic compound whose solubility in water is greater at a first pH than at a second pH which process comprises:

(a) dissolving said compound in water in the presence of sufficient base to raise the pH to said first pH and at least 2 pH units above the pKa of the compound, together with an encapsulating material and an electrolyte which is effective, but present in an amount just insufficient to cause coacervation of the encapsulating material without interacting with it;

(b) stirring and titrating the solution with a titrant effective to reduce the pH of said solution to said second pH to cause the concurrent precipitation of the compound as small particles and formation of a coacervate of the encapsulating material; and

(c) gelling the encapsulating material.

3. A process according to claim 1, wherein the encapsulating material is selected from the group consisting of gelatin, methylcellulose, sodium carboxymethylcellulose, cellulose acetate phthalate, and polyvinylpyrrolidone.

4,608,279

GALVANIC CELLS HAVING ION EXCHANGE RESIN IN THEIR CATHODE MIX

Brooke Schumm, Jr., Bay Village, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 27, 1984, Ser. No. 686,750

Int. Cl.[4] H01M *6/06*

U.S. Cl. 429—224 11 Claims

1. A galvanic cell comprising

an anode;

an acidic electrolyte; and

a wet cathode mix comprising electrolytic manganese dioxide and a conductive material in a ratio of greater than about 7:1 by weight, and an ion exchange resin in an amount between about 0.5 and 4.0 weight percent of said wet cathode mix.

4,608,280

POLYMER CONCRETE COMPOSITION, METHODS FOR LINING PIPES AND FOR FILLING GIRTHWELD CONCRETE CUTBACKS USING THE COMPOSITION

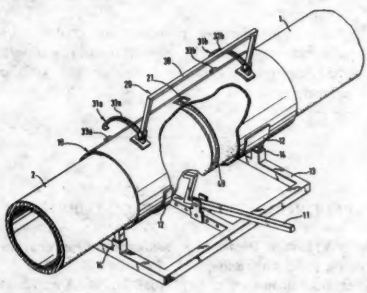
Richard M. Robinson, Strassbourg, France, and Gordon Svarc, Au, Switzerland, assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1984, Ser. No. 645,584

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332080

Int. Cl.[4] C04B *26/18, 26/14;* C08F *299/02, 299/04*

U.S. Cl. 427—230 6 Claims



1. A polymer concrete composition which contains no transition metal compounds and comprises a vinyl ester or unsaturated polyester resin, a peroxy-containing free-radical initiator, an aminecontaining accelerator and a filler, the composition comprising from 10 to 35 weight percent of the vinyl ester resin or the unsaturated polyester resin, including any copolymerizable monomer, and from 65 to 90 weight percent of the filler, said weight percents being based on the total amount of vinyl ester or unsaturated polyester resin, including any copolymerizable monomer, and filler employed; and from 0.2 to 8 weight percent of the free-radical initiator and from 0.05 to 2 weight percent of the amine-containing accelerator, the amounts of free-radical initiator and amine-containing accelerator based on the total weight of the unsaturated polyester or vinyl ester, including any copolymerizable monomer contained in the resins.

4,608,281

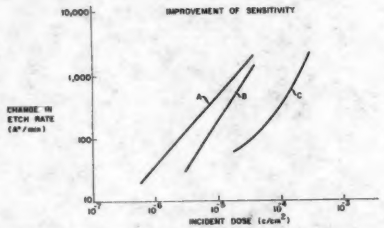
IMPROVEMENTS IN SENSITIVITY OF A POSITIVE POLYMER RESIST HAVING A GLASS TRANSITION TEMPERATURE THROUGH CONTROL OF A MOLECULAR WEIGHT DISTRIBUTION AND PREBAKED TEMPERATURE

Harry W. Deckman, Clinton, and John H. Dunsmuir, Annandale, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 629,997, Jul. 12, 1984, abandoned, which is a continuation of Ser. No. 528,178, Aug. 31, 1983, abandoned, which is a continuation-in-part of Ser. No. 426,243, Sep. 28, 1982, abandoned. This application Jul. 31, 1985, Ser. No. 760,935

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—385.5 7 Claims



1. A method of increasing the sensitivity of a positive polymer resist having a glass transition temperature comprising:

A. obtaining a narrow molecular weight fraction positive polymer resist having $1 \leqq M_w/M_n < 1.5$ and $M_w < 500{,}000$ where M_w=weight-average molecular weight and M_n=number-average molecular weight, said resist dissolved in a solvent;

B. coating a substrate with said narrow fraction resist such that a portion of said solvent remains trapped in said coating; and

C. baking said narrow fraction resist coated substrate at a temperature below the glass transition temperature such that a portion of said solvent remains trapped in said coating.

4,608,282

FLUOROPOLYMER SURFACE LUBRICANT AND COATING

Harry V. Runge, Reston, Va., assignor to Fluorocarbon Technologies, Inc., Annapolis, Md.

Continuation-in-part of Ser. No. 722,724, Apr. 11, 1985. This application Apr. 11, 1985, Ser. No. 722,725

Int. Cl.[4] B05D *3/02*; C10M *105/52*

U.S. Cl. 427—385.5 28 Claims

24. A method of coating a surface with a thin film containing particles of a fluoropolymer comprising the steps of:

providing a dispersion comprising particles of a fluoropolymer and a carrier medium, which carrier medium comprises grease;

providing a solvent capable of diluting the dispersion and which is adapted to evaporate after application of the composition to the surface;

mixing the dispersion with the solvent to form a mixture such that said dispersion is well dispersed in said solvent; and

applying the mixture to a surface after which substantially all of the solvent evaporates thereby leaving a thin film containing the particles of a fluoropolymer on the surface.

4,608,283

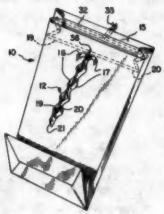
BAG WITH BOW

Ruth A. White, 550 Horton Ave., Tipp City, Ohio 45371

Filed Sep. 5, 1985, Ser. No. 772,810

Int. Cl.[4] D04D *7/10*

U.S. Cl. 428—4 3 Claims



1. In a gift package, the improvement comprising:

a bag with an open top,

means in said bag forming part of said top and defining draw string receiving portions which are proportioned to receive a ribbon therethrough in surrounding relation to said top,

a self-making ribbon type bow member having a pair of outside bow loop-forming ribbons and means defining an elongated inside operating ribbon member which may be pulled with respect to said outside ribbons to form a decorative bow by said outside ribbons, said inside ribbon member being threaded through said drawstring receiving portions of said bag and forming with respect to said bag a loop encircling said bag top with said outside ribbons positioned adjacent one side of said bag, said inside ribbon member having means defining a finger-gripping portion extending exteriorly of said bag on a side thereof remote from said outside ribbons, whereby pulling on said inside ribbon member at said finger-gripping portion causes said bag top to be closed by gathering action on said inside ribbon member and causes said outside ribbons to form a decorative bow closely adjacent an outer surface of said bag.

4,608,284

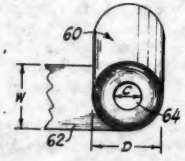
HEAT SHRINKABLE LABEL AND RELATED CONTAINER

John Roales, Hempstead, N.Y., assignor to Cellu-Craft Inc., New York, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,191

Int. Cl.[4] B65D *1/12*; B32B *27/08*

U.S. Cl. 428—35 15 Claims



1. A label material comprising a lamination of first and second layers, said lamination having a determinable longitudinal direction, said first layer being of a material which is both dimensionally stable at room temperature and shrinkable at temperatures substantially elevated above room temperature, said first layer being of a material which is resistant to elongation at least in said longitudinal direction, the material of said second layer being moisture resistant, resistant to dimensional change at elevated said first layer being of bi-axially oriented

polystyrene having a thickness of 0.0005–0.003 inches. Said second layer being of non-oriented polypropylene having a thickness of 0.00025–0.002 inches.

4,608,285

LAMINATED SUBSTRATE AND COLLAPSIBLE DISPENSING CONTAINER MADE THEREFROM

Edward A. Tavss, Kendall Park, and David L. Carroll, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,723
Int. Cl.⁴ B65D *35/08*
U.S. Cl. 428—35 **18 Claims**

10. A collapsible paste dispensing container of layers of materials having low flavor absorption characteristics comprising a first innermost layer of an acetal polymer, a second layer of metal foil, a third layer of paper and an outermost fourth layer of an acetal polymer.

4,608,286

GAS BARRIER MULTILAYER PACKAGING MATERIAL HAVING EXCELLENT FLEXING ENDURANCE

Yasuo Motoishi, Kurashiki; Kenji Satoh, Tondabayashi, and Kyoichiro Ikari, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 22, 1985, Ser. No. 693,126
Claims priority, application Japan, Jan. 31, 1984, 59-17485
Int. Cl.⁴ B32B *27/30, 27/32*
U.S. Cl. 428—35 **15 Claims**

1. A gas barrier multilayer food packaging material having excellent flexing endurance suitable for use as an inner container in a bag-in-box or bag-in-carton assembly, which comprises an intermediate layer of a saponified product of an ethylene-vinyl acetate copolymer having a thickness of from 5–20μ, and surface layers of linear low-density polyethylene on both sides of said intermediate layer, each of said surface layers having a thickness of from 25–60μ, the layers being adhered to each other by an adhesive resin.

4,608,287

CONFORMABLE COVERING WITH HIGH COEFFICIENT OF FRICTION

Gérard Biotteau, Saint Pierre Montlimart, France, assignor to S.A.R.L. Manufacture Francaise des Chaussures Eram, Saint pierre Montlimart, France

Filed Jun. 7, 1983, Ser. No. 501,906
Claims priority, application France, Jun. 15, 1982, 82 10464
Int. Cl.⁴ A61F *13/02*
U.S. Cl. 428—40 **6 Claims**

1. A conformable sheet covering with high coefficient of friction, comprising an upper layer formed of a fine powder at least partially imbedded in a curable resin layer bonded to a lower support layer, wherein the support layer is made of a thin sheet material having an elongation coefficient between 20 and 60% for a tensile force per linear centimeter less than 20N, a layer of contact adhesive on the back face of the support layer, and a pull off film protecting the adhesive layer, whereby the sheet can be stretched to conform to the contours of a three-dimensional surface and said adhesive will thereafter retain the sheet in the shape of said contours.

4,608,288

TAMPER PROOF LABEL OR SEAL

Heinz Spindler, Neu-Ulm, Fed. Rep. of Germany, assignor to Joachim Dudzik, Nürtingen and Winifred Dudzik, Neckartailfingen, both of, Fed. Rep. of Germany

Filed Aug. 21, 1984, Ser. No. 642,960
Int. Cl.⁴ B32B *3/14*
U.S. Cl. 428—78 **10 Claims**

1. A label, comprising in combination

a transparent base foil having first and second surfaces, said first surface including at least one preselected area;

a first adhesive layer;

an intermediate layer interposed between said first surface of said base foil and said first adhesive layer, said preselected area constituting a region of decreased adhesion between said base foil and said intermediate layer, said intermediate layer adhering to a said first adhesive layer outside of said preselected area at a certain adhesion exceeding said decreased adhesion, and

a cover foil carrying a second adhesive layer, said second adhesive layer being applied to said second surface of said base foil so as to be aligned therewith in an initial position, said cover foil extending past said base foil so as to create a protective rim therebeyond, and being irreversibly deformable upon application of a force thereto,

whereby, upon even partial removal of said cover foil from said base foil, any subsequently attempted realignment of said cover foil with said base foil in an endeavor to achieve said initial aligned position is no longer feasible.

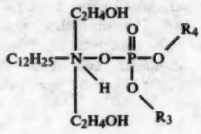
4,608,289

CARPET CONTAINING SANITIZING COMPOUNDS AND METHODS

Robert H. McIntosh, Greensboro, N.C., assignor to Interface Research Corporation, Atlanta, Ga.

Continuation of Ser. No. 523,734, Aug. 16, 1983, abandoned, which is a continuation of Ser. No. 226,006, Jan. 19, 1981, abandoned, which is a continuation of Ser. No. 149,555, May 13, 1980, abandoned, which is a continuation of Ser. No. 930,879, Aug. 4, 1978, abandoned. This application Mar. 8, 1984, Ser. No. 570,952
Int. Cl.⁴ D03D *27/00*
U.S. Cl. 428—95 **2 Claims**

1. A self-sanitizing, carpet product including thermoplastic surface yarn and a backing coat, said carpet product having an upper portion, and said backing coat including as a homogeneously distributed additive therein, an alkyl phosphate of the formula:



where:

R_3=an alkyl group of up to 18 carbon atoms;

R_4=R_3

said alkyl phosphate being present in said backing coat at a concentration of between 0.01% and 10% by weight based on the weight of said backing coat, and said backing coat being selected from the group consisting of a polyvinyl chloride emulsion and a styrene butadiene resin; and

said backing coat and said surface yarn being constructed and arranged so that alkyl phosphate in said backing coat will migrate by capillary action from said backing coat toward said upper portion of said carpet product to inhibit the growth of microorganisms therein.

4,608,290

STABLE SELVAGE INTERMEDIATE FOR WEFT INSERTED WARP KNIT DRAPERIES

Julius R. Schnegg, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 661,072, Oct. 15, 1984. This application Oct. 18, 1985, Ser. No. 789,116

Int. Cl.[4] B32B *3/08, 5/08, 5/12;* **D04B** *21/14*

U.S. Cl. 428—101 **20 Claims**

1. An intermediate fabric produced in the production of a decorative fabric, the intermediate fabric comprising:

a warp-wise dimensionally stable substrate having a first face;

weft yarns disposed on the first face of the substrate and extending parallel to each other;

stitching thread for holding the weft yarns on the first face;

said stitching thread in a central body section of the fabric, between opposite edges thereof in a direction perpendicular to the machine direction, being disposed in a dimensionally unstable, but aesthetic, basically zigzag configuration in the machine direction; and

said stitching thread in the selvage portions of said fabric, on opposite sides of the said central body section thereof, being disposed in a dimensionally stable configuration.

11. A method of making a dimensionally stable decorative fabric utilizing a weft-inserted warp knitting machine having three stitching bars, comprising the steps of:

(a) feeding a warp-wise stable substrate in the machine direction of a knitting machine;

(b) inserting weft yarn in a direction perpendicular to the moving direction of the substrate utilizing the knitting machine;

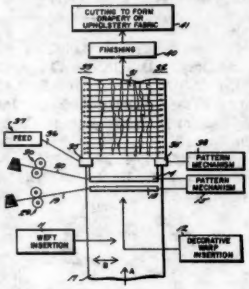
(c) feeding stitching thread to the first and second stitching bars;

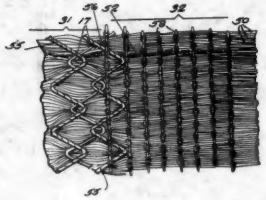
(c1) feeding stitching thread to the third stitching bar;

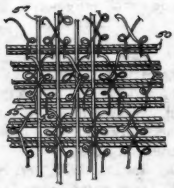
(d) in a central body portion of the substrate while stitching with the first and second stitching bars, to cause the stitching thread to hold the weft yarn in place on the substrate, moving the stitching bars in opposite directions in a basically zigzag form to create a dimensionally unstable but aesthetic pattern of stitching thread, in the machine direction of the fabric produced;

(d1) on selvage edge portions of the substrate in the machine direction, stitching with the third stitching bar while moving it in a pattern so as to create dimensionally stable stitching;

practicing steps (c1) and (d1) simultaneously with steps (c) and (d);







(e) finishing the fabric produced by steps (a)–(d1); and

(f) cutting the finished fabric to form desired fabric pieces.

4,608,291

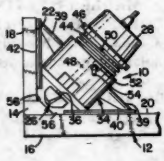
METHOD FOR MAKING A COUNTER TOP AND PRODUCT OF SAME

Gene G. Gove, Box 636, 1237 W. 13th, Hastings, Minn. 55033

Filed Dec. 12, 1983, Ser. No. 560,318

Int. Cl.[4] B05D *5/12*

U.S. Cl. 428—119 **2 Claims**



1. A method for making a counter top comprising the steps of:

fastening a connecting slab having parallel upper and lower

sides between horizontal and vertical orthogonal slabs, said horizontal slab having a flat top surface and said vertical slab having a flat front surface; and

sliding a rotating shaping tool across said connecting slab to arcuately shape said connecting slab to tangentially meet the flat top surface and the flat front surface of said horizontal and vertical slabs.

2. A counter top prepared by a process comprising the steps of:

fastening a connecting slab having parallel upper and lower sides between horizontal and vertical orthogonal slabs, said horizontal slab having a flat top surface and said vertical slab having a flat front surface; and

sliding a rotating shaping tool across said connecting slab to arcuately shape said connecting slab to meet the flat top surface and the flat front surface of said horizontal and vertical surfaces.

4,608,292

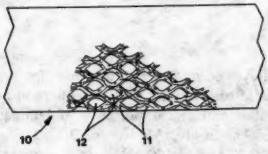
WEB WITH ENHANCED FLUID TRANSFER PROPERTIES AND METHOD OF MAKING SAME

Frederich O. Lassen, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 17, 1983, Ser. No. 542,332

Int. Cl.[4] B32B *3/10*

U.S. Cl. 428—131 **4 Claims**



1. An absorbent web comprising linear oriented absorbent fibers in thermoplastic material said web including a purality of spaced apertures extending downward through the web surface thereby increasing the available surface area for fluid absorption.

4,608,293

COMPOSITE SUBSTRATE FOR A THIN-FILM MAGNETIC HEAD

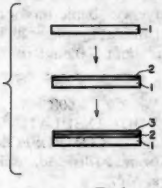
Toshiaki Wada, and Yoshiaki Katsuyama, both of Osaka, Japan, assignors to Sumitomo Special Metal Co., Ltd., Osaka, Japan

Filed Mar. 2, 1983, Ser. No. 471,491

Claims priority, application Japan, Jul. 27, 1982, 57-131834

Int. Cl.[4] G11B *7/12*

U.S. Cl. 428—141 **5 Claims**



1. A composite substrate for a thin-film magnetic head comprising a substrate made of a material selected from the group consisting of soft magnetic and non-magnetic materials and an insulating film on said substrate, said insulating film having a surface opposite to said substrate which has a surface roughness not greater than 50 Å and is stress-free, said composite substrate being made by (1) providing a substrate made of a material selected from the group consisting of soft magnetic and non-magnetic materials, (2) forming an insulating film on said substrate, said insulating film having a surface opposite to said substrate, (3) placing said substrate with insulating film therein in an aqueous suspension containing between 0.5 and 20% by weight of one or more polishing powders selected from the group consisting of MgO, SiO_2 and Al_2O_3, each polishing powder having a particle diameter of not greater than 0.1 micron, and (4) polishing the insulating film on said substrate using a rotating polisher to provide a surface roughness to said insulating film of not greater than 50 Å and a stress-free character and thus form said composite substrate.

4,608,294

PROCESS FOR OBTAINING AREAS OF DISTINCTIVE APPEARANCE ON SYNTHETIC COVERINGS AND THE PRODUCT DERIVED THEREFROM

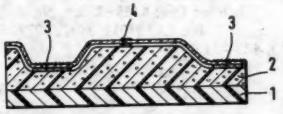
Jean-Francois Courtoy, Wiltz, and Daniel Marchal, Esch sur Alzette, both of Luxembourg, assignors to Eurofloor S.A., Luxembourg, Luxembourg

Filed Apr. 25, 1984, Ser. No. 603,843

Claims priority, application Luxembourg, Apr. 25, 1983, 84765; Aug. 11, 1983, 84957

Int. Cl.[4] B05D *3/06*

U.S. Cl. 428—141 **36 Claims**



1. A process of obtaining areas of distinctive appearance on a synthetic covering, the covering including a support layer, including the steps of:

depositing at least a first polymeric coating having at least one first polymerization initiator thereon onto a first selected area of said support layer;

depositing at least a second polymeric coating having at least one second polymerization initiator therein onto a second selected area of said support layer, said first and second polymerization initiators each being comprised of one of a combination of two initiators which decompose under different spectral conditions, said two initiators comprising two of the three initiators selected from the group consisting of thermal initiators, ultraviolet radiation initiators and ionic initiators, at least a portion of said second polymeric coating comprising a crosslinkable monomer;

pre-gelling said deposited coatings;

graining selected areas of said deposited coatings to form a matted surface;

polymerizing said first polymeric coating via said first initiator wherein said first polymeric coating is fixed to said support layer, and wherein said matted surface on said first polymeric coating is fixed thereon; and

gelling said second polymeric coating to cause fluidization of said second polymeric coating thereby smoothing said matted surface thereon.

4,608,295

PAPER SUPPORT

Henner Drum, Rhodt, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,965

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337023

Int. Cl.[4] B32B *7/06, 27/10*

U.S. Cl. 428—202 **14 Claims**

1. A paper support which is suitable for use as a base for

printed layers and/or varnish layers which are applied to one side of the support, in particular for slide-off decals, comprising:

a layer of an essentially aluminum ion-free paper;

a barrier layer applied to the obverse surface of said paper;

a release layer applied to said barrier layer; and

a covering coating comprising a fluoroalkylphosphate applied to the reverse surface of said paper.

2. A slide-off decal, comprising a varnish masking film containing an image applied to a paper support, wherein said support comprises a paper support as defined in claim 1.

4,608,296

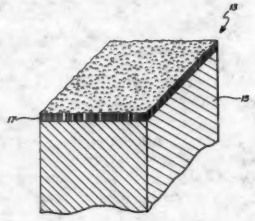
SUPERCONDUCTING FILMS AND DEVICES EXHIBITING AC TO DC CONVERSION

John E. Keem; Stanford R. Ovshinsky; Hossein Sadate-Akhavi, all of Bloomfield Hills; Juei-Teng Chen, Sterling Heights, and Alan M. Kadin, Troy, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Dec. 6, 1983, Ser. No. 558,616

Int. Cl.[4] H01L *39/22, 21/203*

U.S. Cl. 428—215 **13 Claims**



1. A superconducting film comprising:

a non-equilibrium structure providing local variations in superconducting transition temperature, said structure formed from at least two components, at least one of said components being a metallic material and at least one of said components being a non-metallic material, said structure including a plurality of regions exhibiting characteristic lengths in at least two directions through the structure of less than 500 Angstroms to provide AC to DC conversion of an RF AC signal imposed on the structure in the absence of a magnetic field applied thereto, said structure having an oxygen content throughout the structure of less than ten percent, said structure includes a microscopically inhomogeneous microstructure providing said characteristic length and said microstructure being a columnar microstructure.

9. A superconducting film comprising:

a non-equilibrium structure providing local variations in superconducting transition temperature, said structure formed from at least two components, at least one of said components being a metallic material and at least one of said components being a non-metallic material, said structure including a plurality of regions exhibiting characteristic lengths in only one direction through the structure of less than 500 Angstroms to provide AC to DC conversion of an RF AC signal imposed on the structure in the presence of a magnetic field applied thereto, said structure having an oxygen content throughout the structure of less than ten percent, and said structure being multilayer composite film providing said characteristic length.

4,608,297

MULTILAYER COMPOSITE SOFT MAGNETIC MATERIAL COMPRISING AMORPHOUS AND INSULATING LAYERS AND A METHOD FOR MANUFACTURING THE CORE OF A MAGNETIC HEAD AND A REACTOR

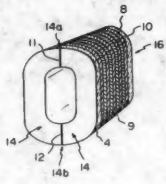
Yutaka Shimada; Hiroshi Kojima, both of Sendai, and Takashi Hasegawa, Fujisawa, all of Japan, assignors to Showa Denka Kabushiki Kaisha, Japan

Continuation of Ser. No. 468,794, Feb. 22, 1983, abandoned. This application May 17, 1985, Ser. No. 734,827

Claims priority, application Japan, Apr. 21, 1982, 57-65500; Dec. 24, 1982, 57-232984; Dec. 24, 1982, 57-232985

Int. Cl.[4] G11B *5/147;* **B32B** *9/00*

U.S. Cl. 428—215 **5 Claims**



1. A multilayer composite soft magnetic material comprising a non-magnetic base having provided thereon by sputtering a plurality of laminates, said plurality of laminates having an effective permeability (u_{eff}) between 10^3 and 10^4 at a frequency of between 20 KHz and 100 MHz, and an overall thickness of less than or equal to 100 microns,

wherein each of said laminates comprises an amorphous magnetic alloy layer and an insulating material layer,

wherein each of said amorphous magnetic layers exhibits virtually zero magnetostriction and consists of a composition expressed by $(TM)_{1-x}(M_I, M_{II})_x$, wherein TM consists essentially of greater than 90 and up to 100 atomic percent Co, and 0 to less than 10 atomic percent of at least one metallic element selected from the group consisting of Fe and Ni, M_I is least one element selected from the group consisting of Zr, Hf, and Y, M_{II} is at least one metallic element selected from the group consisting of Nb, Ta, Mo, and W, x is from 0.05 to 0.2, and the ratio $M_{II}/(M_I$ and $M_{II})$ is from 0.3 to 0.9,

wherein each of said insulating material layers consist of one member selected from the group consisting of SiO_2, Al_2O_3, ceramic material, and glass,

and, wherein the thickness of each of said amorphous magnetic alloy layers is 10 microns or less, and the thickness of each of said insulating material layers is from about 30 angstroms to about 500 angstroms.

4,608,298

WEATHER PROOF INSULATING TEXTILE FABRIC COMPOSITE

Harry J. Klaff, Owings Mills, Md., assignor to Rockland Industries, Baltimore, Md.

Filed Sep. 5, 1985, Ser. No. 772,849

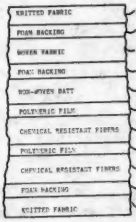
Int. Cl.[4] B32B *7/00*

U.S. Cl. 428—246 **32 Claims**

21. A weather resistant, vertically foldable, insulating, multilayered textile fabric composite comprising:

(1) a first outer layer composed of a knitted textile fabric having tightly interlaced synthetic textile yarns, which layer has water repellency properties;

(2) a second inter-layer next to said first layer composed of a non-woven batt of insulating textile fibers;
(3) a third inter-layer next to said second layer composed of an impervious synthetic polymeric film;
(4) a fourth inside layer next to said third layer composed of a textile fabric, which layer has water repellency properties;



said layers being stitched together by rows of stitches of synthetic textile yarns, which rows of stitches are at least horizontally disposed such that said composite is vertically foldable; and
wherein said composite has an insulating R value of at least 3 at a total composite thickness of at least less than 0.50 inch.

4,608,299
WATER-VAPOR-PERVIOUS, OPTIONALLY WATERPROOF, HEAT INSULATING MATERIAL
Haruo Nomi, Wake, Japan, assignor to Junkosha Company Ltd., Tokyo, Japan
Continuation of Ser. No. 711,231, Mar. 13, 1985. This application Jan. 31, 1986, Ser. No. 824,859
Claims priority, application Japan, Mar. 16, 1984, 59-45158
Int. Cl.[4] B32B *5/16, 3/26*
U.S. Cl. 428—283 **1 Claim**

1. An improved water-vapor-pervious heat insulating material comprising a water-vapor-pervious insulating base material having a discontinuous layer of reflective particles adhered to a surface of said base material by a layer of non-porous resinous adhesive which is pervious to water vapor but impervious to liquid water, wherein said reflective particles are particles of aluminum and wherein said base material is porous, expanded polytetrafluoroethylene, and wherein the amount of said reflective particles is less than 10% by weight bases on said resinous adhesive.

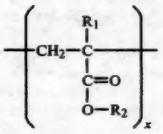
4,608,300
FIBRE COMPOSITE MATERIALS IMPREGNATED WITH A CURABLE EPOXIDE RESIN MATRIX
Urs Gruber, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jun. 11, 1984, Ser. No. 619,751
Claims priority, application Switzerland, Jun. 21, 1983, 3390/83
Int. Cl.[4] B32B *27/26;* C08G *59/56, 65/10*
U.S. Cl. 428—285 **8 Claims**

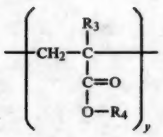
1. A fibre composite impregnated with a solvent-free epoxide resin matrix curable at a temperature less than 120° C. which contains
(a) a liquid epoxide resin or a liquid mixture of epoxide resins,
(b) an aliphatic or cycloaliphatic primary monoamine and-/or disecondary diamine and
(c) a tertiary amine epoxy curing agent or imidazole which cures by catalysis, there being present in the curable epoxide resin matrix, for 1 epoxide equivalent of the epoxide resin (a), 0.15 to 0.8 amine hydrogen equivalent of the amine component (b) and 0.01 to 0.1 mole of the tertiary amine (c).

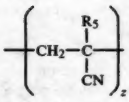
8. A fibre composite system, in particular a fibre composite laminate, prepared from the fibre composite according to claim 1 and, if appropriate, other materials, by shaping and crosslinking the resin matrix.

4,608,301
RADIOGRAPHIC INTENSIFYING SCREEN
Akio Ishizuka, Fujinomiya; Hisashi Yamazaki, and Kikuo Yamazaki, both of Kaisei, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Filed Aug. 1, 1984, Ser. No. 636,595
Claims priority, application Japan, Aug. 2, 1983, 58-141457; Jul. 31, 1984, 59-163363
Int. Cl.[4] B32B *5/16, 27/06;* H01J *1/68*
U.S. Cl. 428—328 **10 Claims**

1. A radiographic intensifying screen comprising a plastic film support and a phosphor layer provided thereon which comprises a binder and a phosphor dispersed therein, said binder containing a (meth)acrylic copolymer in the amount of 5–100% by weight, having repeating units represented by the formulas (I), (II) and (III):

(I)


(II)


(III)


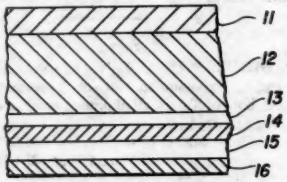
in which each of R_1, R_3 and R_5 is independently a hydrogen atom or an alkyl group; R_2 is a group selected from those consisting of an alkyl group, a cycloalkyl group, an aryl group, a heterocyclic group and an aralkyl group; R_4 is a hydrogn atom or an alkyl group, provided that R_4 is not identical to R_2; and x, y and z which represent molar percents are numbers satisfying the conditions of $5 \leqq x \leqq 99$, $1 \leqq y+z \leqq 95$ and $x+y+z \geqq 90$.

4,608,302
ORIENTED FILMS FROM PROPYLENE COPOLYMERS AND UNPLASTICIZED SARAN
Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.
Filed Jan. 30, 1985, Ser. No. 696,287
Int. Cl.[4] B65B *25/22;* B32B *27/08;* B65D *81/34*
U.S. Cl. 428—349 **7 Claims**

1. A heat-shrinkable thermoplastic film suitable for the packaging of food products comprising:
(a) a first, heat-sealable food contact layer comprising propylene homopolymer or copolymer;
(b) a second layer taken from the group consisting of propylene homopolymer, propylene copolymer, ethylene copolymer, butylene homopolymer, or blends thereof;

(c) a third or adhesive layer comprising a copolymer of ethylene;

(d) a fourth or barrier layer comprising a low viscosity unplasticized vinylidene chloride copolymer;



(e) a fifth or adhesive layer; and

(f) a sixth or optical clarity layer as in said first or second layer.

4,608,303

PRODUCTION OF ARTICLES FROM MINERALS

Denis G. H. Ballard, Chester; Colin S. Cundy, Frodsham; Graham R. Rideal, Chester, and David C. W. Morley, Preston, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 116,150, Jan. 28, 1980, abandoned, which is a continuation of Ser. No. 22,078, Mar. 19, 1979, abandoned, which is a continuation of Ser. No. 831,913, Sep. 9, 1977, abandoned. This application Jun. 9, 1982, Ser. No. 386,670

Claims priority, application United Kingdom, Sep. 23, 1976, 39510/76; Dec. 9, 1976, 51425/76

Int. Cl.[4] B32B *19/00*

U.S. Cl. 428—357 **22 Claims**

1. A process for the production of shaped articles from vermiculite comprising the steps of:

(1) swelling, by contacting vermiculite ore with an aqueous solution of at least one salt of sodium, lithium, or an organosubstituted ammonium cation, followed by aqueous washing, so that the ore swells to at least twice its original volume,

(2) delamination of the swollen vermiculite, by subjecting the particles in the aqueous suspension from step (1) to a shearing action until a suspension containing vermiculite particles having dimensions less than 50 microns is produced,

(3) elimination from the suspension from step (2) of essentially all particles having a diameter larger than 50 microns and,

(4) formation of shaped articles from the resultant aqueous suspension by the removal of water from the suspension whilst the article is being shaped against a solid surface by deposition of vermiculite particles from the suspension.

4,608,304

GLASS FIBERS COATED WITH AQUEOUSLY DISPERSED COATING COMPOSITIONS

James W. Rosthauser, Imperial, Pa., assignor to Mobay Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 429,708, Sep. 30, 1982, Pat. No. 4,522,851. This application Feb. 8, 1985, Ser. No. 699,531

Claims priority, application European Pat. Off., Feb. 11, 1984, 84101420.2

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—378 **6 Claims**

1. A process for the production of coated glass fibers which comprises

(1) applying an aqueously dispersed, heat-curable coating composition comprising

(a) a water-dispersible epoxy resin component containing external and/or chemically incorporated non-ionic emulsifiers and

(b) a water-dispersible, blocked polyisocyanate component containing chemically incorporated anionic hydrophilic groups

in a weight ratio of component (a) to component (b) of about 1:10 to 10:1 to said glass fibers and

(2) curing the coated glass fibers at elevated temperature.

4,608,305

BINDER AND SHOEBOARD PRODUCTS CONTAINING THREE HEAT REACTIVE RESINS

Alphonse R. Presto, Holyoke, Mass., assignor to Texon, Inc., Farmington, Conn.

Filed Jun. 18, 1984, Ser. No. 621,936

Int. Cl.[4] C08L *33/08;* D06M *21/00*

U.S. Cl. 428—365 **10 Claims**

1. A binder for shoeboard material comprising a dispersion of three heat reactive copolymers including:

(a) from about 20 to about 45 percent by weight, based on the total weight of copolymers, of a copolymer which comprises:

(i) about 70 to about 80 percent by weight of ethyl acrylate,

(ii) about 7 to about 13 percent by weight of methyl methacrylate,

(iii) about 4 to about 8 percent by weight of acrylonitrile, and

(iv) about 0.5 to about 4 percent by weight of a functional monomer which comprises acrylamide, N alkylol acrylamide, methacrylic acid, derivatives of methacrylic acid or mixtures of these;

(b) from about 35 to about 65 percent by weight, based on the total weight of copolymers, of a copolymer which comprises:

(i) styrene and butadiene in approximately equivalent percentages by weight, and

(ii) N methylol acrylamide in an amount up to about 5 percent by weight; and

(c) from about 3 to about 18 percent by weight, based on the total weight of copolymers, of a copolymer which comprises:

(i) about 85 percent by weight styrene;

(ii) about 15 percent by weight butadiene; and

(iii) about 2 percent by weight of carboxylic acid and/or a derivative of carboxylic acid.

5. A shoeboard material comprising a fiberous sheet material impregnated with a binder comprising a dispersion of three heat reactive copolymers including:

(a) from about 20 to about 45 percent by weight, based on the total dry weight of copolymers, of a copolymer which comprises:

(i) about 70 to about 80 percent by weight of ethyl acrylate,

(ii) about 7 to about 13 percent by weight of methyl methacrylate,

(iii) about 4 to about 8 percent by weight of acrylonitrile, and

(iv) about 0.5 to about 4 percent by weight of a functional monomer which comprises acrylamide, N alkylol acrylamide, methacrylic acid, derivatives of methacrylic acid or mixtures of these;

(b) from about 35 to about 65 percent by weight, based on the total dry weight of copolymers, of a copolymer which comprises:

(i) styrene and butadiene in approximately equivalent percentages by weight, and

(ii) N methylol acrylamide in an amount up to about 5 percent by weight; and

(c) from about 3 to about 18 percent by weight, based on the

total dry weight of copolymers, of a copolymer which comprises:

(i) about 85 percent by weight styrene;

(ii) about 15 percent by weight butadiene; and

(iii) about 2 percent by weight of carboxylic acid and/or a derivative of carboxylic acid.

4,608,306

ANTI-TREEING ADDITIVES CONTAINING A POLYOLEFIN AND A SILOXANE HAVING AROMATIC ORGANIC GROUPS

Gary A. Vincent, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 483,357, Apr. 8, 1983, abandoned. This application Jun. 19, 1984, Ser. No. 622,044

Int. Cl.[4] C08L *23/08;* B32B *25/20*

U.S. Cl. 428—391 10 Claims

1. A composition consisting essentially of a polyolefin and 1.0 to 5.0 weight percent, based on the total weight of the polyolefin, of an additive selected from

(i) cyclic siloxanes containing at least one aromatic group attached to silicon through a silicon-carbon bond;

(ii) liner siloxanes having the general formula $HO\{C_6H_5(CH_3)SiO\}_xH$ wherein x has a value of from 2 to 10,

(iii) linear siloxanes having the general formula $RO\{C_6H_5(CH_3)SiO\}_xR$ wherein x has a value of from 2 to 36 and R is selected from a group consisting of CH_3O— and

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4,608,307

JEWELLING AND ORNAMENTAL MATERIAL AND PROCESS FOR PRODUCTION THEREOF

Yuji Nakano, Kameoka; Kazushi Kamiyama, and Tatuo Kobayashi, both of Kyoto, all of Japan, assignors to Kyocera Corporation, Tokyo, Japan

Filed Oct. 25, 1984, Ser. No. 664,710

Claims priority, application Japan, Oct. 26, 1983, 58-201345

Int. Cl.[4] B32B *3/22, 5/16*

U.S. Cl. 428—402 9 Claims

1. A jewelling and ornamental material comprising a calcined structure consisting essentially of many amorphous silica spheres regularly arranged in a three-dimensional array, said amorphous silica spheres having a particle diameter in the range of 150 to 400 mμ, and a zirconium compound filled in pores existing among the amorphous silica spheres, the amount of the zirconium compound being 0.005 to 8% by weight, as zirconium, based on the entire material.

4,608,308

DISPERSIVE TYPE ELECTROLUMINESCENT DEVICE AND METHOD FOR MANUFACTURING SAME

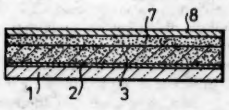
Masami Igarashi; Yoshinori Kato, and Yoshimi Kamijo, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 30, 1984, Ser. No. 605,596

Claims priority, application Japan, Apr. 28, 1983, 58-73722

Int. Cl.[4] H05B *33/12;* B32B *17/06*

U.S. Cl. 428—408 6 Claims



1. A dispersive type electroluminescent device comprising a fluorescent layer coated on a transparent electrode and an opposing electrode provided opposed to said transparent electrode with said fluorescent layer interposed therebetween, wherein said opposing electrode is composed of a laminated structure comprising a conductive layer formed on said fluorescent layer and a low resistance layer formed on said conductive layer, where said conductive layer is mainly composed of conductive fine particles, and a majority of said conductive fine particles are three-dimensionally in contact with each other forming a conductive path and enter the fine clearance at the surface of said fluorescent layer; and said conductive layer does not contain a synthetic resin binder.

6. A method of forming a dispersive type electroluminescent device comprising:

forming a transparent electrode on a transparent substrate;

forming a fluorescent layer on said transparent electrode; and

forming a conductive layer by depositing a liquid containing a dispersion of conductive fine particles in an organic liquid without any synthetic resin binder onto said fluorescent layer and drying up said liquid so that only said conductive fine particles are left to enter fine clearances in the surface of said fluorescent layer.

4,608,309

THERMAL ENERGY STORAGE SLURRY MATERIAL

Ih-Houng Loh, Cambridge; Robert E. Cohen, Jamaica Plain, and Raymond F. Baddour, Belmont, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 22, 1985, Ser. No. 725,617

Int. Cl.[4] B05D *3/04;* C08J *3/24*

U.S. Cl. 428—409 9 Claims

1. A thermal energy storage material comprising a slurry consisting essentially of substantially non-sticking particles of a polyolefin mixed with a fluid, said fluid being a chemically inert liquid at temperatures and pressures used for thermal energy storage, said particles having substantially the entire surface portions of substantially all of said particles crosslinked at a depth less than 1000 Angstroms to prevent fusing of said particles to each other at relatively high temperature utilized for thermal energy storage wherein the heat of fusion of said particles is substantially identical to said particles of polyolefin prior to surface crosslinking.

7. A process for preparing a thermal energy storage material comprising contacting non-sticking particles consisting essentially of a polyolefin with a relatively cold plasma gaseous medium for crosslinking substantially the entire surface portion of substantially all of said particles at a depth less than 1000 Angstroms and forming surface modified particles, said crosslinking being sufficient to prevent fusing of said particles to each other at relatively high temperatures utilized for thermal energy storage, said surface crosslinked particles having a heat of fusion substantially identical to said particles of polyolefin prior to surface modification, mixing said surface crosslinked particles with a fluid to form a slurry for thermal energy storage, said fluid being a chemically inert liquid at temperatures and pressures used for thermal energy storage.

4,608,310

POLYCARBONATE, LATEX COMPOSITIONS COMPRISING SUCH

Tsang J. Chen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1983, Ser. No. 506,248

Int. Cl.[4] B32B *5/12*

U.S. Cl. 428—412 5 Claims

1. An element comprising a support bearing a layer of a polycarbonate having from about 0.1 to 30 mole percent of recurring units containing a carboxyl or tertiary amine acid addition salt component.

4,608,311

MULTILAYER POLYCARBONATE STRUCTURES

Harold F. Giles, Jr., Cheshire, and Robert P. Hirt, Jr., Lenox, both of Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 2, 1985, Ser. No. 688,196
Int. Cl.[4] B32B *27/08, 27/36*
U.S. Cl. 428—412 29 Claims

1. A multilayer structure consisting essentially of:
(i) at least one polycarbonate layer;
(ii) at least one olefin alcohol layer; and
(iii) at least one unmodified polyolefin layer; said layers being adhered together by means of tie layers disposed between said layers, said tie layers consisting essentially of a tie material selected from olefin vinyl ester copolymers and modified polyolefin copolymers.

4,608,312

ULTRAVIOLET RADIATION CURABLE SILICONE RELEASE COMPOSITIONS

Richard P. Eckberg, Saratoga Springs; Richard A. Striker, Troy, and Frank J. Modic, Schenectady, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 527,299, Aug. 26, 1983, Pat. No. 4,558,147. This application Jul. 19, 1985, Ser. No. 757,105
Int. Cl.[4] B32B *27/08, 25/20;* C08G *77/28;* C08F *2/50*
U.S. Cl. 428—419 9 Claims

1. An ultraviolet radiation-curable silicone release composition comprising:
(A) an odor-free mercaptoalkoyalkylfunctional diorganopolysiloxane consisting essentially of units of the formula $RR'SiO$, wherein R is hydrogen or $C_{(1-8)}$ alkyl and R' is hydrogen, $C_{(1-8)}$ alkyl or a monovalent mercaptoalkoxyalkyl-functional organic radical of from 2 to 20 carbon atoms, said diorganopolysiloxane having up to about 50% by weight mercaptoalkoxyalkyl-functional groups and a viscosity of from about 50 to 10,000 centipoise at 25° C.;
(B) a polysiloxane consisting of from about 0.5 to 100 mole percent of vinyl-functional siloxane units of the formula $(CH_2{=}CH)R_nSiO_{3-n/2}$, where R is hydrogen or $C_{(1-8)}$ alkyl and n has a value of 0 to 2, inclusive, any non-vinyl-containing siloxane units having the formula $R^3{}_mSiO_{4-m/2}$, where R^3 is hydrogen or $C_{(1-8)}$ alkyl and m has a value of from 0 to 3, inclusive; and
(C) a catalytic amount of a photoinitiator.

4,608,313

ADVANCED EPOXY RESINS CROSSLINKED WITH POLYISOCYANATES

Richard A. Hickner, Lake Jackson; Kevin A. Owens, Katy, and Gwendolyn M. Grays, Sugarland, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 640,268, Aug. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 499,097, May 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 393,969, Jun. 10, 1982, abandoned. This application Jun. 26, 1985, Ser. No. 750,629
Int. Cl.[4] C08G *3/58*
U.S. Cl. 428—414 21 Claims

1. A coating composition comprising
(I) an advanced epoxy resin composition prepared by reacting in the presence of a suitable catalyst
(A) a composition comprising
(1) at least one aliphatic diepoxide and
(2) optionally at least one aromatic diepoxide; with
(B) at least one compound having two aromatic hydroxyl groups per molecule and an average molecular weight of at least about 188; wherein
components (A-1) and (A-2) are employed in quantities such that from about 10 to about 100 percent of the epoxide equivalents contained in component (A) are 90 contributed by component (A-1); from about 0 to about percent of such epoxide equivalents are contributed by component (A-2) and wherein components (A) and (B) are present in a quantity which provides an advanced epoxy resin having an EEW of from about 350 to about 15,000;
(II) a curing quantity of at least one curing agent for component (I) selected from the group consisting of blocked and unblocked polyisocyanates; and
(III) at least one solvent in a sufficient quantity such that the coating composition including components (I), (II), (III) and any other desirable component has a suitable application viscosity.

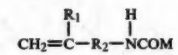
4,608,314

ACRYLIC AND ACRYLIC/EPOXY COPOLYMER COMPOSITIONS AS SELF-CURING CATHODIC ELECTROCOATING VEHICLES

Edward T. Turpin, Elyria, and David T. Thrane, Fairview Park, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 677,872, Dec. 4, 1984, abandoned. This application Sep. 13, 1985, Ser. No. 775,865
Int. Cl.[4] C08G *18/80;* B32B *27/40;* A23L *1/00;* C25D *13/06*
U.S. Cl. 428—425.8 13 Claims

1. A self-curable amino cation-active aqueous acid-dispersible polymer composition containing amino, hydroxyl and blocked isocyanate functionality derived from the polymerization of:
(a) at least 5 weight percent of a polymerizable blocked monoisocyanate having the formula:



wherein R_1 is hydrogen or C_{1-3} lower alkyl group; R_2 is a diradical selected from the group consisting of phenylene, benzylene or α,α-dimethylbenzylene group; and M is an isocyanate blocking agent residue; said blocked monoisocyanate being copolymerized with
(b) 30 to 95 weight percent polymerizable vinyl comonomer comprising at least one member of the group consisting of acrylate and methacrylate esters, styrene, vinyl chloride, vinylidene chloride and vinyl acetate and wherein said acrylate or methacrylate esters are selected from alkyl, hydroxyalkyl, alkylaminoalkyl and dialkylaminoalkyl esters, wherein the weight percentages are based on the combined weights of A and B monomers and total 100 percent; and wherein said polymerization is optionally carried out in the presence of
(c) 60 to 300 weight percent of an amine-epoxy adduct comprising the reaction product of an epoxide and an organic amine having at least one primary or secondary group reactive with said epoxide; said percent (c) being based on total weights of (a) and (b) monomers; wherein the amine cation-activity is derived from monomer (b), amine-epoxy adduct (c) or combinations thereof sufficient to provide an amino-cation activity of from about 35 to 175 milliequivalents per 100 gram resin solids and to effect polymer solubilization or dispersion on partial or full acidification.

7. The process of coating a substrate which comprises
(a) providing a self-curing blocked-isocyanate polymer prepared by polymerizing at least 5 weight percent blocked meta-isopropenyl-α,α-dimethylbenzyl isocyanate polymerized alone or copolymerized with one or more vinyl unsaturated copolymerizable comonomers selected from the group consisting of styrene; and alkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl or dialkylaminoalkyl acrylate or methacrylate esters; wherein
said polymerization or copolymerization is optionally conducted in the presence of 60 to 300 weight percent of an amine-epoxy adduct, based on the total weight of the blocked isocyanate and vinyl monomers,
said polymer having an amino nitrogen content sufficient to

disperse or dissolve the polymer in water on acidification or partial acidification;

(b) applying said polymer as an acidified aqueous solution or dispersion to a substrate;

(c) curing the coated substrate.

4,608,315

MAGNETIC RECORDING MEDIUM

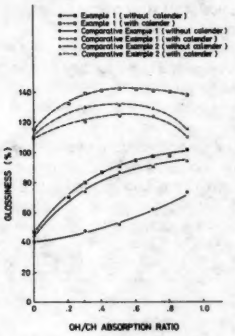
Kuniichi Yoda; Yuji Ishihara, both of Saku, and Hitoshi Azegami, Tobu, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 16, 1985, Ser. No. 723,788

Claims priority, application Japan, Apr. 19, 1984, 59-77573

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—425.9 6 Claims


Example 1 (without calender)
Example 1 (with calender)
Comparative Example 1 (without calender)
Comparative Example 1 (with calender)
Comparative Example 2 (without calender)
Comparative Example 2 (with calender)
GLOSSINESS (%)
OH/CH ABSORPTION RATIO

1. A magnetic recording medium comprising a resinous component in which magnetic particles are dispersed and a base to which the dispersion is solidly applied, said resinous component comprising a copolymer having an OH/CH absorption ratio according to the infrared absorption spectrum of 0.2 or more and made from

(A) vinyl chloride,

(B) vinylidene chloride,

(C) a vinyl alkylcarboxylate,

(D) an other monomer copolymerizable with vinyl chloride, and

(E) a saponified vinyl alkylcarboxylate,

and a rubbery binder.

4. A magnetic recording medium comprising a resinous component in which magnetic particles are dispersed and a base to which the dispersion is solidly applied, said resinous component comprising a copolymer having an OH/CH absorption ratio according to the infrared absorption spectrum of 0.2 or more and made from

(A) vinyl chloride,

(B) vinylidene chloride,

(C) a vinyl alkylcarboxylate,

(D) an other monomer copolymerizable with vinyl chloride, and

(E) a saponified vinyl alkylcarboxylate, a rubbery binder, and a polyisocyanate.

4,608,316

CERAMIC WIRING BOARD AND PROCESS FOR PRODUCING THE SAME

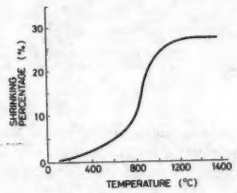
Gyozo Toda, Hino; Tsuyoshi Fujita, Yokohama; Hiromi Tosaki, Yokohama, and Takashi Kuroki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1985, Ser. No. 776,879

Claims priority, application Japan, Oct. 1, 1984, 59-204163

Int. Cl.[4] B32B *9/00*

U.S. Cl. 428—446 5 Claims



1. A ceramic wiring board comprising an insulating layer made of silica and having pores in said silica.

4,608,317

MATERIAL SHEET FOR METAL SINTERED BODY AND METHOD FOR MANUFACTURING THE SAME AND METHOD FOR MANUFACTURING METAL SINTERED BODY

Osamu Kobayashi, Tokyo; Hiroshi Sasaki, Hatoyama; Toshiki Kaneko, Kawagoe; Hideaki Ikeda, Iruma, and Yoshihisa Yamamura, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1985, Ser. No. 723,030

Claims priority, application Japan, Apr. 17, 1984, 59-77117; Jun. 8, 1984, 59-117928; Jun. 19, 1984, 59-125484

Int. Cl.[4] B22F *3/00*

U.S. Cl. 428—546 26 Claims

16. A material sheet for a metal sintered body comprising a metal powder mixture having a sintering property and a plastic binder including a thermoplastic synthetic resin excellent in anti-cracking property and a thermoplastic synthetic resin excellent in stacking property,

wherein said metal powder mixture having a sintering property comprises a mixed powder of 70 to 90 weight % of self-fluxing metal powder and 10 to 30 weight % of metal powder having a high melting point which is higher in melting point than said self-fluxing metal powder and to which said self-fluxing metal powder can be adhered.

4,608,318

CASTING HAVING WEAR RESISTANT COMPACTS AND METHOD OF MANUFACTURE

Nicholas Makrides, Delmont, and Earle W. Stephenson, Latrobe, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 257,795, Apr. 27, 1981, abandoned.

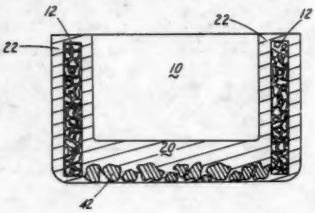
This application Apr. 17, 1984, Ser. No. 600,600

Int. Cl.[4] B22F *7/08*

U.S. Cl. 428—553 18 Claims

1. A tough wear resistant body comprising: a penetration resistant component formed by powder metallurgy methods of

compaction and solid state diffusion bonding at temperatures between about 1900° F. and about 2250° F. and having cemented tungsten carbide particles with a size greater than 400 mesh, a stainless steel matrix, and wherein said particles are



bonded to and located substantially within said stainless steel matrix; a second metallic matrix; and wherein said penetration resistant component is bonded to and embedded in said second metallic matrix.

4,608,319

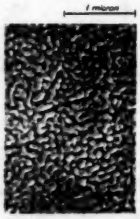
EXTENDED SURFACE AREA AMORPHOUS METALLIC MATERIAL

Gerald A. Croopnick, Trabuco Cyn, and David M. Scruggs, San Juan Capistrano, both of Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 10, 1984, Ser. No. 649,070

Int. Cl.[4] C22F *1/00*; C21D *9/00*; C23F *1/00*; B01J *32/00*

U.S. Cl. 428—613 **13 Claims**



1. A process for preparing an extended surface area, amorphous metallic article, comprising the steps of:

preparing a piece of a homogeneous, solid solution amorphous metallic alloy, the alloy having a composition associated with a eutectic reaction between at least two solid phases;

phase separating the homogeneous alloy at a temperature which is below the crystallization temperature of the composition and is also below the spinodal temperature of the composition, for a time sufficent to form two distinct yet interconnected solid phases within the piece, the solid phases each being internally continuous, amorphous and in communication with the surface of the piece; and

removing a portion of one solid phase, thereby exposing to the ambient environment an amount of surface of the remaining solid phase that is greater than the corresponding gross surface area of the piece, said step of removing to occur after said step of phase separating.

4,608,320

SURFACE-TREATED STEEL STRIPS ADAPTED FOR ELECTRIC RESISTANCE WELDING

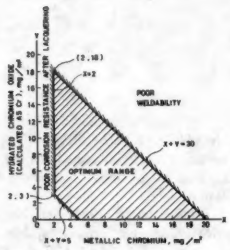
Kazuo Mochizuki; Hisatada Nakakoji; Toshio Ichida; Toshio Irie; Hajime Ogata, and Kyoko Yamaji, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Division of Ser. No. 628,265, Jul. 6, 1984, Pat. No. 4,561,943.

This application Jun. 5, 1985, Ser. No. 741,615

Int. Cl.[4] C25D *5/36*

U.S. Cl. 428—629 **6 Claims**



1. A surface-treated steel strip adapted for electric resistance welding, consisting essentially of

a steel strip,

a first layer of iron-nickel alloy formed on the steel strip and having a weight ratio of Ni/(Fe+Ni) in the range between 0.02 and 0.50 and a thickness of 10 to 5,000 angstroms,

a second layer of tin or iron-tin-nickel alloy formed on said first layer to a coating weight of 0.1 to 1 g/m^2 of tin, and

a third layer formed on said second layer and consisting essentially of metallic chromium and hydrated chromium oxide in a total amount of 5 to 20 mg/m^2 calculated as elemental chromium.

4,608,321

CERAMIC AND METAL COMPOSITE BODY

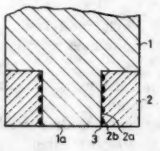
Yasushi Sato, and Hiroshi Matsui, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Feb. 19, 1985, Ser. No. 702,736

Claims priority, application Japan, Feb. 20, 1984, 59-31245; Feb. 20, 1984, 59-31246

Int. Cl.[4] B22F *7/02*

U.S. Cl. 428—632 **14 Claims**



1. A ceramic and metal composite body comprising:

a ceramic member comprised of zirconia, said ceramic member including an outer peripheral surface having a plurality of indentations extensing within a portion of said outer peripheral surface;

a heat resistant metallic member contacting said outer peripheral surface of said ceramic member; and

a brazing material formed in said identations to bond said metallic member to said ceramic member.

4,608,322

NONAQUEOUS ELECTROCHEMICAL CELL

William G. Howard, St. Paul, and David R. Berberick, Maple Grove, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 537,308, Sep. 29, 1983, abandoned. This application Sep. 28, 1984, Ser. No. 656,061
Int. Cl.[4] H01M 4/36
U.S. Cl. 429—105 23 Claims

1. A nonaqueous electrochemical cell comprising in operative relationship,

a. a cathode current collector:

b. an ionically conductive, liquid cathode-electrolyte solution; and

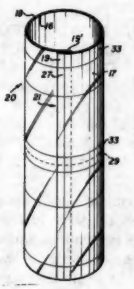
c. a active metal anode, the anode having on its surface which contacts the cathode-electrolyte a polyether film.

4,608,323

CELL JACKET

John F. Zaborney, Carmel, N.Y., assignor to Duracell Inc., Bethel, Conn.

Filed Mar. 7, 1985, Ser. No. 709,276
Int. Cl.[4] H01M 2/02
U.S. Cl. 429—167 26 Claims



1. An electrochemical cell comprising a cell container having a decorative jacket thereon characterized in that said jacket is comprised of a metallic decoration, subject to degradation by a material placed within said cell container, with said metallic decoration being substantially completely enclosed between an outer transparent protective layer and an inner protective layer wherein said outer and inner protective layers are substantially resistant to degradation by said material and are substantially impervious thereto and wherein each of said inner and outer protective layers extends beyond the entire periphery of said metallic decoration and said extensions of said inner and outer protective layers are sealingly adhered to each other in an area substantially completely peripherally surrounding said metallic decoration whereby said metallic decoration is substantially completely enclosed by said inner and outer protective layers.

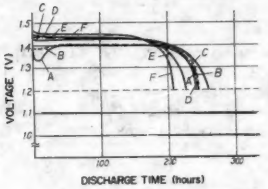
14. A decorative jacket, for an electrochemical cell, comprised of a metallic decoration, subject to degradation by a material placed within said cell, with said metallic decoration being substantially completely enclosed between an outer transparent protective layer and an inner protective layer, wherein said outer and inner protective layers are substantially resistant to degradation by said material and are substantially impervious thereto, and wherein each of said inner and outer protective layers extends beyond the entire periphery of said metallic decoration and said extensions of said inner and outer protective layers are sealingly adhered to each other in an area substantially completely peripherally surrounding said metallic decoration whereby said metallic decoration is substantially completely enclosed by said inner and outer protective layers.

4,608,324

ORGANIC ELECTROLYTE CELL

Takabumi Fujii, Suita, and Takashi Iijima, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP83/00400, § 371 Date Jul. 8, 1985, § 102(e) Date Jul. 8, 1985, PCT Pub. No. WO85/02297, PCT Pub. Date May 23, 1985
PCT Filed Nov. 10, 1983, Ser. No. 756,985
Int. Cl.[4] H01M 6/14
U.S. Cl. 429—194 7 Claims



1. An organic electrolyte cell, which comprises a cathode using as an active material a mixture of copper oxide and chalcopyrite, an anode using as an active material lithium or a lithium base alloy, and an organic electrolyte comprising a salt dissolved in an organic solvent.

4,608,325

ANODE BINDERS FOR ELECTROCHEMICAL CELLS

Mohamed I. Ismail, Mississauga, Canada, assignor to Duracell Inc., Bethel, Conn.

Filed Oct. 6, 1983, Ser. No. 539,438
Int. Cl.[4] H01M 4/62, 4/42
U.S. Cl. 429—217 1 Claim

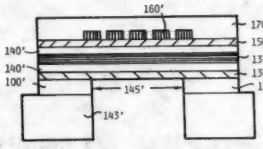
1. An electrochemical cell comprised of an alkaline electrolyte, a manganese dioxide cathode and a gelled anode comprised of mercury amalgamated zinc, a starch graft copolymer gelling agent and a liquid petrolatum binder in amounts between 0.02% to 0.2% by weight thereof.

4,608,326

SILICON CARBIDE FILM FOR X-RAY MASKS AND VACUUM WINDOWS

Armand P. Neukermans, Palo Alto; Kuo L. Chiang, Los Altos; Frederic N. Schwettmann, San Jose, and Donald R. Bradbury, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 579,640, Feb. 13, 1984, abandoned. This application Dec. 4, 1985, Ser. No. 804,331
Int. Cl.[4] G03F 9/00
U.S. Cl. 430—5 8 Claims



1. An X-ray mask structure comprising:

a substrate;

a first intermediate amorphous layer composed substantially of an inorganic material over said substrate;

a first inorganic layer composed substantially of SiC over said first intermediate amorphous layer, so that the first

intermediate amorphous layer breaks the epitaxy between the substrate and the first inorganic layer;

a second intermediate amorphous layer composed substantially of an inorganic material over said first inorganic layer;

a second inorganic layer composed substantially of SiC over said second intermediate amorphous layer, the second intermediate amorphous layer breaking the epitaxy between the first inorganic layer and the second inorganic layer; and

a patterned layer of X-ray absorbing material over said second inorganic layer.

4,608,327

METHOD OF FORMING COMPOSITE IMAGES

Tateki Oka, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 17, 1984, Ser. No. 631,834

Claims priority, application Japan, Jul. 21, 1983, 58-133678; Jul. 21, 1983, 58-133679

Int. Cl.⁴ G03G *5/082*

U.S. Cl. 430—54 **10 Claims**

1. A method of forming composite images comprising:

a first step of charging and simultaneously exposing a composite photoresponsive member having a electroconductive base, a photoconductive layer and an insulation layer to a negative image;

a second step of irradiating said photoresponsive member with light,

a third step of charging said photoresponsive member with an alternating-current charging means to reduce the surface potential charged in the first step to approximately zero;

a fourth step of exposing said photoresponsive member to a positive image thereby forming a composite electrostatic latent image; and

a fifth step of developing said composite electrostatic latent image.

4,608,328

DONOR FOR TOUCHDOWN DEVELOPMENT

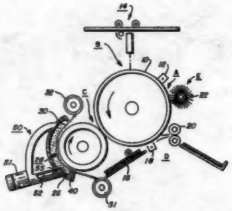
William M. Schwarz, Webster, N.Y., and John M. Pochan, Racine, Wis., assignors to Xerox Corporation, Stamford, Conn.

Filed May 2, 1985, Ser. No. 729,790

The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.

Int. Cl.⁴ G03G *13/08, 15/08*

U.S. Cl. 430—101 **18 Claims**



1. The method of developing a positively charged electrostatic latent image on an imaging surface comprising the steps of;

providing a reservoir for holding toner,

at least partially filling said reservoir with toner,

positioning a moveable donor member such that a portion of its surface extends into said reservoir of toner, and;

providing a webbed screen in contacting relationship with an area of the surface of said donor member that extends into said reservoir, moving said donor member relative to said screen so that toner pressing through said webbed screen is friction charged and a smooth toner layer is applied to said donor member,

said donor member having a surface comprising an active polymer having a basic amine moiety whereby when said donor member is moved, the roll contact between said toner, screen and donor member produces negatively charged toner particles; and

developing said electrostatic latent image with said charged toner particles.

4,608,329

IMAGEABLE TONER POWDER

Thomas C. Geisler, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 8, 1985, Ser. No. 689,706

Int. Cl.⁴ G03G *9/08, 9/16*

U.S. Cl. 430—110 **16 Claims**

1. A thermally imageable toner powder of particles comprising at least 50 weight percent of a supercoolable material, at least 0.01 weight percent of a colorant, up to 20 weight percent of a binder and up to 40 weight percent of an antifouling agent.

4,608,330

METHOD FOR PRODUCING MICROCAPSULES AND PHOTOSENSITIVE MICROCAPSULES PRODUCED THEREBY

Charles P. Marabella, Woodbury, Minn., assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 533,087, Sep. 19, 1983, abandoned. This application Mar. 27, 1985, Ser. No. 716,793

Int. Cl.⁴ G03C *1/00, 1/40, 1/72*; B01J *13/02*

U.S. Cl. 430—138 **22 Claims**

1. A process for forming microcapsules having discrete capsule walls comprising the steps of forming an emulsion of an oily core material in a continuous aqueous phase containing methylated polygalacturonic acid as an emulsion stabilizer, and enwrapping particles of said oily core material in a formaldehyde condensation product produced by in situ condensation of an amine and formaldehyde.

4,608,331

PHOTOSENSITIVE PLATES WITH DIAZONIUM COMPOSITION LAYER AND POLYURETHANE PHOTOPOLYMER WITH UNSATURATION IN SIDE CHAIN OVERLAYER

Carl Bernstein, Deerfield; Konstantinos Arvanitis, Roselle, and Luigi Amariti, Bloomingdale, all of Ill., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Nov. 16, 1984, Ser. No. 672,296

Int. Cl.⁴ G03C *1/54, 1/70*

U.S. Cl. 430—156 **10 Claims**

1. A photopolymeric plate having a photosensitive coating thereon, comprising:

a plate base;

a layer of light sensitive diazonium composition over the plate base; and

a polyurethane photopolymeric composition over the diazonium composition, said polyurethane photopolymeric composition including a polyurethane photopolymer with a polymeric backbone having recurring groups selected from the class consisting of urethane groups, urear groups, and combinations thereof, said photopolymer further having an alkyl group attached to and pendant to said backbone through an ether linkage, and said polymeric backbone has terminal groups selected from the class consisting of an —NCO group, a reaction product of an —NCO group and an amine, a reaction product of an —NCO group and an alcohol, and combination thereof.

4,608,332

ELECTRON LITHOGRAPHY MASK MANUFACTURE

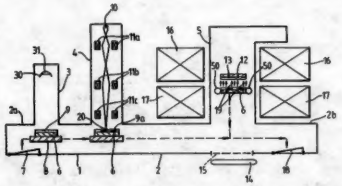
Rodney Ward, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1984, Ser. No. 606,089

Claims priority, application United Kingdom, May 25, 1983, 8314435

Int. Cl.[4] G03C 5/00

U.S. Cl. 430—296 10 Claims



1. A method of lithographically defining a pattern in a layer of electron sensitive resist on a substrate comprising the steps of

defining a photoemissive pattern by selectively exposing a layer of photoemissive material on a transparent plate to radiation, said radiation causing local modification in electron emissive properties of said photoemissive material,

illuminating said photoemissive pattern on said transparent plate with electromagnetic radiation to form an electron emissive mask, said step of illuminating causing a patterned beam of electrons to be emitted from said photoemissive pattern, and

exposing a layer of electron sensitive resist on a substrate to said patterned beam of electrons.

4,608,333

RADIATION SENSITIVE POLYMER COMPOSITION

Gentaro Ohbayashi, Kusatsu; Susumu Umemoto, Yokohama, and Hiroo Hiramoto, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 579,008

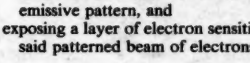
Claims priority, application Japan, Mar. 3, 1983, 58-34907; Aug. 19, 1983, 58-150296

Int. Cl.[4] G03C 1/70; C08F 8/00, 2/46

U.S. Cl. 430—281 23 Claims

1. A radiation-sensitive composition comprising:

(1) a polymer (I) containing repeating units (A) represented by the following formula:

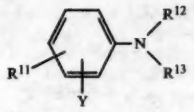


(A)

wherein R^1 is a trivalent or tetravalent aromatic or heteroaromatic residue having 6 to 30 carbon atoms, R^2 is a divalent aromatic or heteroaromatic residue having 6 to 30 carbon atoms, R^3 is a hydrogen atom or an ammonium ion, n is a integer of 1 or 2, and $COOR^3$ is located in an ortho or peri position with respect to the amide linkage,

(2) an organic compound (II) having a radiation-dimerizable or radiation-polymerizable olefinic double bond and an amino radical or a quaternary ammonium salt, and

(3) an aromatic secondary or tertiary amine compound (III) which is chemically inactive to actinic radiation, said amine compound (III) being at least one compound represented by the following formula:



wherein each of R^{11} and R^{12} independently represents a hydrogen atom, a lower alkyl group having 1 to 6 carbon atoms or a lower alkyl group having 1 to 6 carbon atoms which is substituted with a polar group, R^{13} is a lower alkyl group having 1 to 6 carbon atoms or a lower alkyl group having 1 to 6 carbon atoms which is substituted with a polar group, and Y is a hydrogen atom, a hydroxyl group, a nitro group, a lower alkoxy group or a halogen atom.

4,608,334

SILVER HALIDE COLOR LIGHT-SENSITIVE MATERIAL

Sadanobu Shuto; Munehisa Fujita, and Kazunori Hasebe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 681,740, Dec. 14, 1984, abandoned. This application Sep. 12, 1985, Ser. No. 775,941

Claims priority, application Japan, Dec. 19, 1983, 58-239284

Int. Cl.[4] G03C 1/46, 1/08

U.S. Cl. 430—505 19 Claims

1. A silver halide color light-sensitive material comprising a support having provided thereon at least two emulsion layers, each comprising at least one coupler, that are sensitive to the same color light but have different sensitivities, wherein a light-insensitive intermediate layer comprising gelatin is provided between any two of said emulsion layers that are adjacent to each other, and the higher sensitivity emulsion layer of said two emulsion layers has a smaller silver/coupler molar ratio than that of the lower sensitivity emulsion layer of said two emulsion layers.

4,608,335

ENZYMATIC UREA ASSAY

Piero Fossati, Lissone, Italy, assignor to Miles Italiana S.p.A., Milan, Italy

Filed Jun. 8, 1984, Ser. No. 618,831

Claims priority, application Italy, Aug. 8, 1983, 48827 A/83

Int. Cl.[4] C12Q 1/58, 1/48, 1/26

U.S. Cl. 435—12 20 Claims

1. A composition for the enzymatic determination of urea in a fluid sample, which composition comprises urea amidolyase, pyruvate kinase, pyruvate oxidase, a divalent cation, a monovalent cation, phosphoenolpyruvate, thyamine pyrophosphate, adenosine triphosphate, bicarbonate, and a color indicator system.

4,608,336

#3B THEOPHYLLINE IMMUNOASSAY EMPLOYING 9-THEOPHYLLINE REAGENTS

Jeffrey L. Benovic, Durham, N.C.; Robert T. Buckler, Edwardsburg, Mich.; John F. Burd, Elkhart, Ind., and Thomas M. Li, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 296,817, Aug. 27, 1981, Pat. No. 4,533,493. This application May 11, 1983, Ser. No. 493,609

Int. Cl.[4] G01N 33/53

U.S. Cl. 435—7 12 Claims

1. In an immunoassay method for determining theophylline in a test sample, wherein the test sample is combined with an antibody to theophylline and with a labeled form of theophylline or a binding analog of theophylline, and wherein the rela-

tive amount of the labeled reagent that becomes bound to the antibody is determined,

the improvement which comprises employing as the antibody to theophylline an antibody prepared against an immunogen comprising theophylline covalently linked at its 9-position to an immunogenic carrier material.

4,608,337

HUMAN HYBRIDOMAS AND THE PRODUCTION OF HUMAN MONOCLONAL ANTIBODIES BY HUMAN HYBRIDOMAS

Carlo M. Croce, Philadelphia, Pa., assignor to The Wistar Institute, Philadelphia, Pa.

Continuation of Ser. No. 204,832, Nov. 7, 1980, abandoned. This application May 17, 1983, Ser. No. 495,168

Int. Cl.[4] C12P *21/00;* **C12N** *15/00, 5/00;* **G01N** *33/53*

U.S. Cl. 435—68 **20 Claims**

1. A composition comprising a stable, continuous human myeloma cell line which is capable of hybridization with antibody-producing cells of humans and other animals to form a stable, fused cell hybrid capable of producing said antibody, said cell line being a mutant of GM 1500 human B cells which is deficient in hypoxanthine phosphoribosyltransferase.

17. A fused cell hybrid of (a) a mutant of GM-1500 human myeloma cell line sensitive to hypoxanthine-aminopterin-thymidine medium and (b) an antibody-producing lymphocyte.

4,608,338

PROCESS FOR BIOCONVERSION-PRODUCT RECOVERY

Jih-Han Hsieh, Parsippany, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jun. 10, 1982, Ser. No. 387,083

Int. Cl.[4] C12P *7/44, 17/04, 7/50;* **C12R** *1/40*

U.S. Cl. 435—142 **14 Claims**

1. In a microbial bioconversion process in which a non-growth organic substrate in an aqueous fermentation medium is bio-oxidized by whole cells to an extracellular carboxylic acid product having a solubility of less than about 1.0 weight percent in the aqueous fermentation medium, the improvement which comprises neutralizing the acidic pH conditions in the fermentation medium by the addition of ammonia during the bioconversion period, separating the microbial cells from the fermentation medium to provide a cell-free fermentation broth containing ammonium carboxylate product, adding sulfuric acid or phosphoric acid to the fermentation broth to precipitate the carboxylate product in the free carboxylic acid form, separating the carboxylic acid precipitate from the fermentation broth and treating the fermentation broth with a basic reagent selected from the group consisting of metal hydroxides, oxides and carbonate compounds which causes the precipitation of a water-insoluble metal salt, and separating the metal salt precipitate to provide a resultant fermentation broth for recycle which contains a water-soluble ammonium compound.

4,608,339

PROTOPLAST FUSION METHOD FOR HIGH-FREQUENCY DNA TRANSFECTION IN HUMAN CELLS

George H. Yoakum, 10244 Millstream Dr., Gaithersburg, Md. 20879; Curtis C. Harris, 8402 Thornden Ter., Bethesda, Md. 20817; Brent E. Korba, 8255 Stone Trail Ct., Laurel, Md. 20707, and John F. Lechner, 12908 Neola Rd., Wheaton, Md. 20906

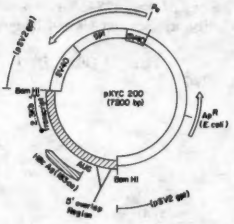
Filed Oct. 25, 1983, Ser. No. 545,257

Int. Cl.[4] C12N *15/00, 5/00;* **C12P** *21/02*

U.S. Cl. 435—172.2 **7 Claims**

1. A process for stably transfecting a variety of human cell types with recombinant plasmids capable of replicating in *E. coli* comprising producing a stable protoplast containing a recombinant plasmid;

fusing said stable protoplast with human cells in the presence



of fusion grade PEG reagent previously treated with an ion exchange resin;

removing said PEG reagent by dilution;

and incubating an analyzing for said recombinant plasmid.

4,608,340

IMMOBILIZED AMINOACYLASE ENZYME

Bèla Szajàni, Tusnadi u. 26., 1125 Budapest; Jànosnè Kiss, Vajda u. 36/b, 6723 Szeged; Jòzsefnè Ivony, Mezo Imre u. 21-23, 1081 Budapest; Irèn Huber, Villanyi u. 86., 1118 Budapest; Làszlò Boros, Pauler u., 1013 Budapest, and Ivàn Darò czi, Dessewffy u. 28., 1066 Budapest, all of Hungary

Continuation of Ser. No. 494,072, May 12, 1983, abandoned, which is a division of Ser. No. 384,766, Jun. 3, 1982, Pat. No. 4,532,214. This application Nov. 27, 1984, Ser. No. 675,265

Int. Cl.[4] C12N *11/08, 11/06, 9/78;* **C07P** *41/00*

U.S. Cl. 435—180 **2 Claims**

1. A process for the immobilization of an aminoacylase enzyme which comprises:

(a) subjecting copolymer beads consisting essentially of acrylamide and N,N[1]-methylene-bis(acrylamide) and containing —$CONH_2$ groups to acidic or alkaline hydrolysis to convert about 50% of the —$CONH_2$ groups to carboxyl groups,

(b) treating the hydrolyzed copolymer from step (a) with a carbodiimide compound in water solution, or a carbodiimide compound which is disclosed in an organic solvent at a temperature below 0° C.,

(c) applying to the carbodiimide activated copolymer from step (b) a solution of aminoacylase enzyme having a pH of from 6.5 to 8.5, to immobilize said enzyme on said copolymer by covalent bonds, and

(d) washing the immobilized aminoacylase enzyme from step (c).

4,608,341

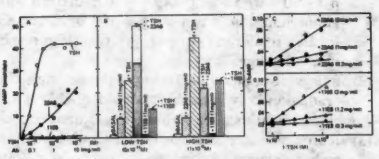
LIVING, FAST-GROWING THYROID CELL STRAIN, FRTL-5

Francesco S. Ambesi-Impiombato, Naples, Italy, assignor to Interthyr Research Foundation, Inc., Md.

Filed May 31, 1983, Ser. No. 499,250

Int. Cl.[4] C12N *5/00;* **C12R** *1/91*

U.S. Cl. 435—240 **10 Claims**



1. A process for preparing a continuous, functional rat cell

strain, having the identifying characteristics of FRTL-5 ATCC CRL 8305 cell strain, comprising:

culturing a continuous, functional rat cell line FRTL in a medium comprising thyrotropin and calf serum to obtain FRTL-5 cells and cloning said FRTL-5 cells to obtain cells of an FRTL-5 strain having the identifying characteristics of FRTL-5 ATCC CRL 8305 cell strain.

10. A continuous, functional rat thyroid cell strain having the identifying characteristics of FRTL-5 ATCC CRL 8305 cell strain.

4,608,342

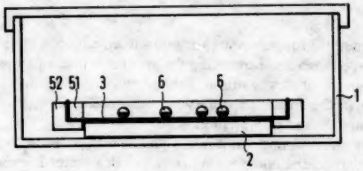
METHOD OF GROWING A CONFLUENT LAYER OF CELLS ON A POROUS OR SEMI-PERMEABLE SUBSTRATE AND APPARATUS FOR PRACTICING THE METHOD

Stephan Nees, Waldwiesenstr. 30b, 8000 München 70, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 609,841

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317550

Int. Cl.⁴ C12N *5/00*; C12M *3/00*

U.S. Cl. 435—240 **13 Claims**

1. A method for growing a confluent layer of cells on a substrate surface, comprising the steps of: providing a porous or semi-permeable substrate in the form of a tensioned, taut, planar substrate having exposed upper and lower surfaces and independently held in such configuration by a tensioning and holding device; providing a receptacle containing fluid nutrient medium for cell growth, said receptacle having a bottom surface and upstanding side walls about the periphery thereof; arranging within said receptacle a body of solid, plate material having a bottom surface in contact with the bottom surface of said receptacle and an upper solid, planar surface extending above the plane of the bottom surface of said receptacle; arranging said holding and tensioning device within said receptacle such that the lower surface of said substrate is in contact with the upper non-porous surface of said plate material and such that the substrate is surrounded by the fluid nutrient medium for cell growth; providing on the upper surface of said substrate a source of cells; and maintaining said arrangement under conditions, and for a time, effective to produce a confluent layer of cells on the upper surface of said substrate, whereby a region is created created between the mutually contacting surfaces of said substrate and said plate material and in said region substances synthesized by the cells in aid of their anchoring to said substrate and passing through the porous or semi-permeable substrate are enriched proximate to the cells and not substantially decomposed, modified or diluted by the surrounding nutrient medium.

4,608,343

BIOLOGICALLY PORE CULTURE OF *STREPTOMYCES MAJORCIENSIS* LABEDA

David P. Labeda, Monsey; Joseph J. Goodman, Spring Valley; Donald B. Borders, Suffern, all of N.Y.; Raymond T. Testa, Cedar Grove, N.J., and John H. E. J. Martin, deceased, late of New City, N.Y. (by Mary B. Martin, executrix), assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 507,184, Jun. 23, 1983. This application May 30, 1985, Ser. No. 739,334

Int. Cl.⁴ C12P *21/00, 13/00, 1/06*

U.S. Cl. 435—253 **3 Claims**

1. A biologically pure culture of the microorganism *Streptomyces majorciensis* Labeda, sp. nov., having the identifying characteristics of NRRL 15167, said culture being capable of producing the antibiotic LL-C08078α_1, LL-C08078α_2, LL-C08078α_3 or LL-C08078β in recoverable quantity upon fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic anion and cation salts.

4,608,344

METHOD FOR THE DETERMINATION OF SPECIES IN SOLUTION WITH AN OPTICAL WAVE-GUIDE

Timothy J. N. Carter, Halstead, United Kingdom; Claus Dähne, Cnex, and John F. Place, Geneva, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

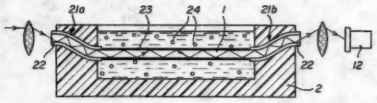
PCT No. PCT/EP82/00195, § 371 Date May 18, 1983, § 102(e) Date May 18, 1983, PCT Pub. No. WO83/01112, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 8, 1982, Ser. No. 499,164

Claims priority, application European Pat. Off., Sep. 18, 1981, 81810385.5

Int. Cl.⁴ G01N *31/06, 33/48*

U.S. Cl. 436—34 **16 Claims**



1. A method of determining the presence of an analyte in solution, which comprises the steps of:

(a) applying a film of a reactant to a surface of an optical waveguide having a refractive index n_1;

(b) injecting a light signal of a wave length λ into said waveguide at one end thereof and measuring at another end of said waveguide a light signal modification resulting from an evanescent light component associated with said signal in said waveguide, said light signal being internally reflected at an angle θ of internal reflection;

(c) contacting said film with a solution of an analyte in a liquid phase of refractive index n_2 less than n_1 whereby said analyte reacts with said reactant to form a layer of analyte-reactant product on said waveguide of a thickness less than λ; and

(d) controlling the depth of penetration dp of said evanescent light component associated with said signal in said waveguide in accordance with the relation

$$dp=\lambda/2\pi(sin^2\theta-(n_2/n_1)^2)^{\frac{1}{2}}$$

so that said depth of penetration dp substantially matches or exceeds the thickness of said analyte-reactant product layer and the measurement in step (b) takes place while the reaction occurs without interference from spurious signals from the liquid phase surrounding said layer.

4,608,345
COLORIMETRIC DETECTION OF ALCOHOLS IN GASOLINE

Nicholas Feldman, Woodbridge, and Jerome Panzer, Millburn, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 5, 1984, Ser. No. 668,575
Int. Cl.[4] G01N *31/00, 33/03, 33/26*
U.S. Cl. 436—60 **14 Claims**

1. A reliable, inexpensive method effectively usable even under field conditions by non-technically trained individuals comprising: detecting the presence of alcohol in hydrocarbon by contacting the hydrocarbon with a mixture including:

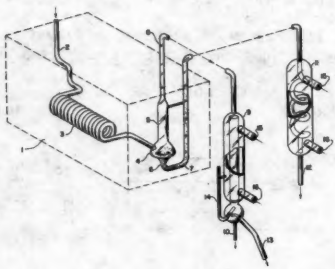
i. an alcohol soluble, hydrocarbon insoluble dye; and

ii. a solid insoluble in hydrocarbon and alcohol, and causing the mixture to undergo a color change in the presence of alcohol.

4,608,346
METHOD FOR DETERMINING PHENOL USING A SIMPLE DISTILLATION APPARATUS

Anton E. Goodwin; Janet L. Marton; Robert M. Owens; Jackie W. Whisenhunt, and Roy D. Swain, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 409,191, Aug. 18, 1982, Pat. No. 4,528,162. This application Dec. 24, 1984, Ser. No. 686,104
Int. Cl.[4] B01D *3/06;* G01N *1/00*
U.S. Cl. 436—131 **3 Claims**



1. A method for determining phenol in liquid water samples comprising passing said samples through a simple distillation apparatus comprising:

(a) passing said samples as distilland through a closed conduit wherein said distilland is heated by heating means, the closed conduit being contained in a casing means and surrounded by heating means contained within said casing means, thereafter passing said distilland to

(b) a vapor draw means connected directly to said closed distilland conduit, said vapor draw means containing at least one expansion chamber substantially vertically disposed in and surrounded by said heating means, the lower portion of the lowest of said expansion chambers containing inert particulate means to increase surface area and condenser means connected to said vapor draw means, wherein the distilland enters said at least one expansion chamber and a large liquid/vapor phase interface is formed providing good heat transfer and substantially total phenol separation, wherein phenolic values are removed by said vapor draw means and condensed to form sample condensate by said condenser means and

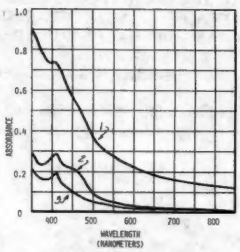
(c) removing bottoms through a bottoms draw means disposed in said heating means and connected to a lower portion of the lowest expansion chamber of said vapor draw means, said bottoms draw means exiting substantially vertically from said lowest chamber and being substantially totally filled with said inert particulate means,

(d) collecting said sample condensate and analyzing said sample condensate for phenol content.

4,608,347
COMPOSITIONS, USES AND METHODS CREATING REVERSE MICELLES FOR THE CLARIFICATION OF BIOLOGICAL FLUIDS TO OBTAIN UNDISTORTED ASSAY OF ANALYTES FOLLOWING CLARIFICATION

Victor A. Bernstam, 2736 Gloucester Way, Ann Arbor, Mich. 48104

Filed Apr. 15, 1982, Ser. No. 368,593
Int. Cl.[4] G01N *1/00;* B01F *17/00*
U.S. Cl. 436—175 **22 Claims**



7. A method for removing turbidity in an aqueous lipid-containing specimen and separating the specimen into aqueous and non-aqueous phases without substantially denaturing labile analytes in the specimen otherwise denatured by organic solvents, the method comprising,

adding the specimen to a non-aqueous composition to form a mixture, the composition comprising a water-immiscible organic solvent and at least one principal surfactant selected from 3-[(C_6–C_{18} alkyl)dimethylammonio]-1-propanesulfonates, the solvent being selected to dissolve the surfactant and to be immiscible with the specimen, said composition in the mixture in sufficient amount to form reverse micelles in the mixture and to dissolve substantially all of the lipids present in the mixture,

thoroughly mixing the mixture of the composition and the specimen,

partitioning the mixture into a non-turbid aqueous phase and a physically separate non-aqueous phase, said physically separate non-aqueous phase containing the lipids, lipid solvent, surfactants and other non-polar substances, and

removing the physically separate non-aqueous phase thereby removing substantially all of the lipids, lipid solvent, surfactants and organic non-polar substances and thereby leaving said analyte containing aqueous phase substantially free of the composition.

16. A non-aqueous composition for partitioning an aqueous water miscible analyte and lipid-containing specimen,

the composition consisting of a water-immiscible organic solvent and at least one surfactant dissolved therein selected from the group consisting of sulfobetaine detergents consisting essentially of 3-[(C_6–C_{18} alkyl)dimethylammonio]-1-propanesulfonates, as principal components and organic solvent soluble surfactants and sulfhydryl group protecting agents both as minor additional components.

4,608,348

GLASS-CERAMICS CONTAINING CRISTOBALITE AND POTASSIUM FLUORRICHTERITE

George H. Beall, Big Flats; John E. Megles, Jr., Corning, and Linda R. Pinckney, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 4, 1985, Ser. No. 794,841
Int. Cl.[4] C03C *10/16, 3/112*
U.S. Cl. 501—3 3 Claims

1. A highly crystalline glass-ceramic article exhibiting great toughness, a modulus of rupture of at least 20,000 psi, and, in the form of bars having dimensions 5"×0.5"×0.1", sagging during the crystallization heat treatment of no more than 0.2" over a 4" span, and wherein potassium fluorrichterite constitutes the predominant crystal phase, but wherein cristobalite is also present in an amount of at least 10% by volume, said glass-ceramic article having an overall composition consisting essentially, expressed in terms of weight percent on the oxide basis, of

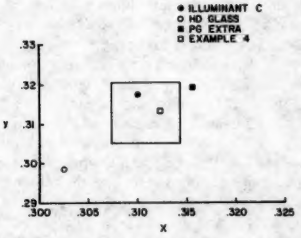
SiO_2	65–69	Na_2O	1.5–3.3
Al_2O_3	0.75–3.5	K_2O	4.2–6.0
MgO	13.5–17.5	BaO	0–2.5
CaO	3–4.8	P_2O_5	0–2.5
Li_2O	0.5–2.0	F	3.3–5.5

4,608,349

PHOTOCHROMIC GLASS COMPOSITIONS FOR LIGHTWEIGHT LENSES

David J. Kerko; David W. Morgan, and David L. Morse, all of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 28, 1985, Ser. No. 797,223
Int. Cl.[4] C03C *4/06, 3/118*
U.S. Cl. 501—13 4 Claims



1. A composition for a photochromic glass consisting essentially, in weight percent on the oxide basis of about:

SiO_2	54–58%
B_2O_3	18–22%
Al_2O_3	7–8%
Li_2O	3.75–4.5%
Na_2O	0–1%
K_2O	5.5–7.5%
TiO_2	0–2%
ZrO_2	2–4.5%
Ag	0.20–0.33%
Cl	0.30–0.50%
Br	0.04–0.12%
CuO	0.007–0.012%
PbO	0–0.08%
Sb_2O_3	0–0.20%

wherein the mole ratio Li_2O:Na_2O equals or exceeds 9:1.

4,608,350

PRECURSOR SOLUTIONS FOR BIOLOGICALLY ACTIVE GLASS

Edward G. Howard, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1983, Ser. No. 546,152
Int. Cl.[4] C03C *8/16*
U.S. Cl. 501—20 9 Claims

1. A stable, aqueous acid solution consisting essentially of precursors that correspond to the components of a biologically active glass, the precursors being convertible to the biologically active glass by heat, the precursor solution showing no substantial amount of precipitation in one hour, the biologically active glass consisting essentially of these components:
SiO_2, 40 to 62 weight percent;
Na_2O, 10 to 32 weight percent;
CaO, 10 to 32 weight percent;
CaF_2, 0 to 18 weight percent;
P_2O_5, 0.1 to 12 weight percent; and
B_2O_3, 0 to 20 weight percent;
provided that Na_2O and CaO, taken together, are at least about 30 weight percent.

4,608,351

LOW PBO-CONTAINING GLASS FOR ELECTRICAL DEVICES

Jean E. Boudot, and Jean P. Mazeau, both of Avon, France, assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 5, 1985, Ser. No. 698,408
Claims priority, application France, Mar. 9, 1984, 84 03635
Int. Cl.[4] C03C *3/105, 3/108*
U.S. Cl. 501—62 1 Claim

1. Glasses consisting essentially of the following approximate composition:
SiO_2 68.75 K_2O 7.2
Al_2O_3 2.4 BaO 8.8
Li_2O 1.0 PbO 3.3
Na_2O 8.3 Sb_2O_3 0.25

4,608,352

NEUTRON-ABSORBENT GLASSES CONTAINING GADOLINIUM AND PROCESS FOR THEIR PREPARATION

Yves Laurent, Cesson Sevigne, and Patrick Verdier, Acigne, both of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed Sep. 30, 1985, Ser. No. 781,809
Claims priority, application France, Oct. 2, 1984, 84 15103
Int. Cl.[4] C03C *3/062, 3/11*
U.S. Cl. 501—73 8 Claims

1. Neutron-absorbent oxide or oxynitride glasses incorporating silicon, aluminum, oxygen or oxygen and nitrogen, which additionally contain gadolinium in a proportion of approximately 5 to 15 atom %.

4,608,353

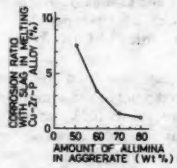
HIGH-ALUMINA REFRACTORY FOR USE IN NON-FERROUS METAL MELTING FURNACE

Hiroshi Nagayama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 25, 1984, Ser. No. 603,670
Int. Cl.[4] C04B *35/10, 35/58*
U.S. Cl. 501—97 11 Claims

1. A high-alumina refractory for use in a non-ferrous metal melting furnace consisting of a mixture of 5 to 25% by weight of silicon nitride particles, 3 to 12% by weight of graphite particles which generate carbon monoxide by reaction with the melt of said non-ferrous metals and a balance of high-alumina aggregate particles containing at least 60% by weight of aluminum oxide; said high-alumina aggregate particles com-

prising coarse grains having a particle diameter of at least 1.2 mm, medium grains having a particle diameter ranging from



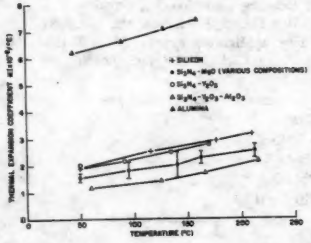
0.15 to 1.2 mm and fine grains having a particle diameter of smaller than 0.15 mm.

4,608,354

SILICON NITRIDE SUBSTRATE

Frank J. Avella, Andover, and Leslie J. Bowen, Concord, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 24, 1984, Ser. No. 685,644
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—97 **3 Claims**



2. A densified silicon nitride article consisting essentially from about 2 to about 15 w/o magnesia with the remainder being silicon nitride, said silicon nitride article having a dielectric constant less than 8, a dielectric loss tangent less than 0.005, a thermal conductivity greater than 50 W/mK, a thermal expansion coefficient from about 70 to about 90% of silicon, a modulus of rupture greater than 70,000 psi and an absolute density from about 3.12 g cm^{-3} to about 3.20 gm cm^{-3}, the densified silicon nitride article being made by the steps following:

Step 1—ball milling silicon nitride powder, from about 2 to about 15 w/o magnesium oxide, and an organic binder in an organic solvent to form a homogeneous slurry;

Step 2—drying the homogeneous slurry from step 1 in an inert atmosphere to form a dry powder;

Step 3—dry ball milling the product from step 2;

Step 4—compacting the product from step 3 to form a compact;

Step 5—heating the product from step 4 in air at a temperature and for a length of time sufficient to remove the organic binder to form a green compact having a density from about 59% to about 65% of theoretical density; and

Step 6—sintering the product from step 5 at a temperature equal to or greater than 1,650° C. in a nitrogen atmosphere and for a time sufficient to form a densified silicon nitride article having a density greater than 97.5% of theoretical.

3. A silicon nitride substrate for silicon microelectronic chips made from the densified silicon nitride article in accordance with claim 2.

4,608,355

HYDROCARBON CONVERSION CATALYST

Pochen Chu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 10, 1983, Ser. No. 521,864
Int. Cl.[4] B01J *29/06, 20/12*
U.S. Cl. 502—68 **12 Claims**

1. A method of forming a calcined zeolite containing catalyst, which comprises treating the zeolite, having exchangeable sites, with a source of a Group IB metal cation in an amount sufficient to insure that at least 10 percent of the exchangeable sites are Group IB metal cation exchanged;

forming a composite of said exchanged zeolite with a clay matrixing material, in which the zeolite does not exceed about 50 percent by weight of the composite; and

calcining the composite at a temperature above 600° C., whereby the alpha value of the composite after calcination is greater than that of a calcined mixture of said clay matrixing material and the zeolite.

2. The method of claim 1, wherein said zeolite is ZSM-5, ZSM-11, ZSM-12, ZSM-20, ZSM-35, ZSM-39, zeolite X, zeolite Y, zeolite Beta or mordenite.

3. The method of claim 2, wherein said Group IB metal is copper or silver.

4,608,356

PREPARATION OF A REFORMING CATALYST

Waldeen C. Buss, Kensington, and Charles R. Wilson, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 20, 1984, Ser. No. 684,316
Int. Cl.[4] B01J *29/06*
U.S. Cl. 502—66 **8 Claims**

6. A method of preparing a reforming catalyst comprising the steps of:

(a) mixing a type L zeolite with an inorganic oxide binder, wherein said inorganic oxide is selected from the group consisting of silica, alumina, and aluminosilicates;

(b) extruding said mixture to form an extrudate;

(c) drying and calcining said extrudate;

(d) ion exchanging said calcined extrudate with an aqueous solution of an alkaline earth metal selected from the group consisting of barium, strontium, and calcium;

(e) drying and calcining said ion exchanged extrudate;

(f) impregnating said calcined extrudate with an aqueous solution of a Group VIII metal and allowing said calcined extrudate to soak in said solution for less than three hours to form a catalyst;

(g) drying said catalyst; and

(h) calcining said dried catalyst with steam in air, wherein said air has at least 3% steam.

4,608,357

CATALYTIC CRACKING WITH MULLITE COMPOSITION PROMOTED COMBUSTION OF CARBON MONOXIDE

Lance D. Silverman, New York, N.Y., and Barry K. Speronello, River Edge, N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Feb. 6, 1984, Ser. No. 577,092
Int. Cl.[4] B01J *20/16;* C01B *31/20*
U.S. Cl. 502—84 **11 Claims**

1. Porous mechanically and thermally stable microspheres consisting essentially of mullite obtained from caustic leached calcined clay, said bodies having palladium impregnated thereon.

4,608,358

CATALYST FOR THE ISOMERIZATION REACTION OF QUADRICYCLANES TO NORBORNADIENES

Zenichi Yoshida, and Sadao Miki, both of Kyoto, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

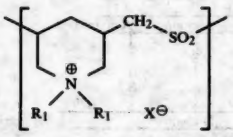
Division of Ser. No. 580,262, Feb. 15, 1984, abandoned. This application Dec. 11, 1984, Ser. No. 680,530

Claims priority, application Japan, Mar. 9, 1983, 58-39799; Mar. 9, 1983, 58-39800

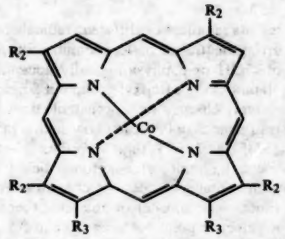
Int. Cl.[4] B01J 21/08, 21/04, 21/16, 23/76

U.S. Cl. 502—164 1 Claim

1. A fixed catalyst for the isomerization of quadricyclanes to norbornadienes which is obtained by dipping an inorganic carrier selected from the group consisting of activated alumina, silica gel, and kaolin, into an aqueous solution of polyamine sulfone, comprising a repeating unit represented by the formula:



wherein R_1 represents a C_{1-3} alkyl and X represents a halogen atom, to be impregnated therewith and drying to form a modified inorganic carrier; dipping the formed modified inorganic carrier into an organic solvent having dissolved therein a porphyrin Co(II) complex represented by the formula:



wherein R_1 is defined above, R_2 represents a C_{1-3} alkyl group and R_3 represents a group of the formula $—C_nH_{2n}—COOH$, wherein n is 1 to 4, to be impregnated therewith; and removing the organic solvent whereby the prophyrin Co(II) complex is absorbed and fixed on said modified inorganic carrier.

4,608,359

IRON CARBIDE ON TITANIA SURFACE MODIFIED WITH GROUP VA OXIDES AS FISCHER-TROPSCH CATALYSTS

Israel E. Wachs, Bridgewater; Rocco A. Fiato, Scotch Plains, and Claudio C. Chersich, Englewood Cliffs, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 626,068, Jun. 29, 1984, Pat. No. 4,559,365. This application Jul. 29, 1985, Ser. No. 759,669

Int. Cl.[4] B01J 27/22, 23/20, 21/06; C07C 1/04

U.S. Cl. 502—177 17 Claims

1. A catalyst comprising iron carbide supported on a surface modified titania support wherein said support comprises an oxide of a metal selected from the group consisting of niobium, vanadium, tantalum or mixture thereof supported on said titania wherein at least a portion of said supported oxide of niobium, vanadium, tantalum or mixture thereof is in a non-crystalline form, wherein the amount of said supported oxide ranges from about 0.5 to 25 weight percent metal oxide on the titania support based on the total support composition and wherein the catalyst contains at least about 2 milligrams of iron, calculated as Fe_2O_3, per square meter of support surface.

6. A process for producing a catalyst comprising iron carbide supported on a surface modified titania support wherein said support comprises an oxide of a metal selected from the group consisting of niobium, vanadium, tantalum or mixture thereof supported on titania wherein at least a portion of said supported oxide is in a non-crystalline form and wherein the amount of said oxide supported on said titania support ranges from about 0.5 to 25 wt. % metal oxide based on the total support composition, said process comprising the steps of:

(a) depositing iron on the surface modified titania support from a solution of iron precursor compound in an amount such that the final catalyst will contain supported iron in an amount of at least about 2 milligrams of iron, calculated as Fe_2O_3, per square meter of support surface;

(b) calcining the iron precursor supported on titania produced in step (a) at a temperature of from about 120° to 500° C. for a time sufficient to decompose said iron precursor material and convert at least a portion of said supported iron to Fe_2O_3; and

(c) contacting said calcined composite formed in step (b) with hydrogen at a temperature of from between about 150°–800° C. for a time sufficient to convert at least a portion thereof to a reduced composite; and

(d) contacting said reduced composite formed in (c) with CO at an elevated temperature of at least about 200° C. for a time sufficient to form said catalyst.

13. As a composition of matter, a composite produced by the steps of:

(a) depositing a precursor material of an oxide of a metal selected from the group consisting of niobium, tantalum, vanadium or mixture thereof on the surface of titania to form a precursor/titania composite;

(b) calcining the composite formed in step (a) above to convert the precursor to the oxide to form the surface modified titania support wherein said so-formed oxide is present on the surface of the titania in an amount of from about 0.5 to 25 wt. % based on the support composition;

(c) depositing iron on the surface modified titania support from a solution of iron precursor compound in an amount such that the final catalyst will contain supported iron in an amount of at least about 2 milligrams of iron, calculated as Fe_2O_3, per square meter of titania support surface;

(e) calcining the iron precursor supported on titania produced in step (a) at a temperature of from about 120° to 500° C. for a time sufficient to decompose said iron precursor material and convert at least a portion of said supported iron to Fe_2O_3;

(f) contacting said calcined composite formed in step (e) with hydrogen at a temperature of from between about 150°–800° C. for a time sufficient to convert at least a portion thereof to a reduced composite; and

(g) contacting said reduced composite formed in (f) with CO at an elevated temperature of at least about 200° C. for a time sufficient to form said catalyst.

4,608,360

DEHYDROGENATION CATALYST COMPOSITIONS AND METHOD OF PREPARING SAME

Hayim Abrevaya, Chicago, and Tamotsu Imai, Mount Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 2, 1985, Ser. No. 751,340

Int. Cl.[4] B01J 23/58, 23/62, 27/08

U.S. Cl. 502—226 19 Claims

1. A catalytic composite comprising a Group VIII noble metal component, a co-formed IVA metal component, an alkali metal or alkaline earth metal component and an alumina support having a surface area of from 5 to 150 m^2/g wherein less than about 18% of the total pore volume of the support is associated with pores having mean diameters of about 300 Angstroms or less and more than about 55% of the total pore

volume of the support is associated with pores having mean diameters of about 600 Angstroms or more.

4,608,361

CATALYST CARRIERS AND PROCESS FOR PREPARATION OF THE SAME

Nobutaka Kanamori, Tokyo, and Masaji Kurosawa, Chiba, both of Japan, assignors to Nichias Corporation; Honshu Paper Mfg. Co., Ltd., both of Tokyo and Sakai Chemical Industry Co., Ltd., Osaka, all of, Japan

Continuation of Ser. No. 248,027, Mar. 26, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,310

Claims priority, application Japan, Mar. 26, 1980, 55-37495

Int. Cl.[4] B01J *32/00;* **B28B** *1/50;* **D21F** *11/02*

U.S. Cl. 502—232 **24 Claims**

1. A process for producing a sheet for a catalyst carrier for vapor-phase reactions, which comprises in combination the steps of:

mixing ceramic fibers, organic fibers, and an organic binder to form a slurry;

forming said slurry into a sheet of paper having a density of 0.2 to 0.4 gram per cubic centimeter;

impregnating said sheet of paper with a silicon compound selected from the group consisting of colloidal silica and ethyl silicate;

converting said silicon compound to silica gel by drying; and

heating said impregnated sheet at a temperature of up to about 1,000° C. to burn up said organic fibers and said organic binder.

15. A sheet for a catalyst carrier produced by a process according to claim 1.

4,608,362

CATALYST FOR THE PRODUCTION OF ALLYL ACETATE

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 663,266, Oct. 22, 1984, abandoned. This application Aug. 2, 1985, Ser. No. 761,982

Int. Cl.[4] B01J *21/00, 23/58, 23/64*

U.S. Cl. 502—243 **6 Claims**

1. A catalyst suitable for the acetoxylation of propylene consisting essentially of metals on a support said metals consisting essentially of potassium, bismuth, palladium, and a promoting amount of rubidium.

4,608,363

ACTIVATED ALUMINA CLAUS CATALYST HAVING INCREASED SODIUM OXIDE CONTENT

Kenneth P. Goodboy, Plum Borough, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 362,383, Mar. 26, 1982, Pat. No. 4,568,664, which is a continuation of Ser. No. 170,638, Jul. 21, 1980, Pat. No. 4,364,858. This application Sep. 19, 1985, Ser. No. 777,519

The portion of the term of this patent subsequent to Feb. 4, 2003, has been disclaimed.

Int. Cl.[4] B01J *21/04, 23/04*

U.S. Cl. 502—330 **6 Claims**

1. An activated alumina catalyst containing sodium oxide for promoting the reaction of hydrogen sulfide and sulfur dioxide so that such compounds may be removed from gases, the catalyst having increased resistance to sulfate poisoning and increased catalytic activity, characterized by the catalyst having a specific surface area greater than 100 m^2/g (BET) and a sodium oxide content in an amount greater than 1.0 wt % (1100° C. calcined basis), the remainder being activated alumina.

4,608,364

PHARMACEUTICAL AGENT FOR THE TREATMENT OF DIABETES MELLITUS

Ulrich Grau, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 632,859

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 3326473

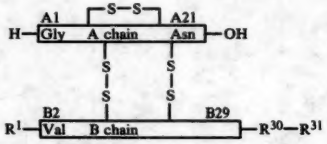
Int. Cl.[4] A61K *37/26*

U.S. Cl. 514—4 **19 Claims**

1. A pharmaceutical composition stable on storing and being suitable for the treatment of diabetes mellitus consisting of a physiologically acceptable excipient and an active compound combination, which contains, as the active compound combination,

(a) an insulin derivative of the formula I

(I)



in which

R^1 denotes H or H—Phe

R^{30} represents the radical of Ala, Thr or Ser and

R^{31} represents a physiologically acceptable organic group of basic character of the formula X_n—S which has up to 50 carbon atoms, in which

n is 0, 1, 2 or 3,

X represents identical or different radicals of naturally occurring neutral or basic α-amino acids and

S denotes OH or a physiologically acceptable group which blocks the carboxyl group but S being, if n is 0, a positively charged or protonatable basic radical or, if n is greater than 0, S can carry such a radical, or in which, if n is 2 or 3, the C-terminus X—S can also represent the homoserine-lapton radical

and which contains or does not contain a terminal carboxyl function or an ester or an amide thereof,

with an iso electric point between 5.8 and 8.5, and

(b) an insulin of the formula I in which R^1 denotes H or H—Phe, R^{30} represents Ala, Thr or Ser and R^{31} denotes OH, or

(b2) physiologically acceptable salts thereof, or

(b3) proinsulin or

(b4) C peptide or

(b5) a combination thereof, component (a) being present in an amount of at least 1% by weight.

4,608,365

TREATMENT OF NEUROLOGIC FUNCTIONS

W. King Engel, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Mar. 30, 1984, Ser. No. 595,214

Int. Cl.[4] A61K *37/43*

U.S. Cl. 514—18 **36 Claims**

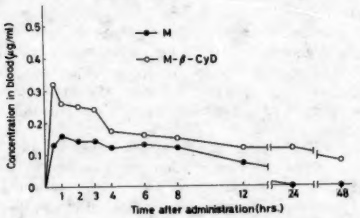
1. A method for improving a dysfunction of the lower motor neurons or upper motor neurons in a mammal, comprising the repeated administration to the mammal suffering from said dysfunction of a therapeutically-effective amount of TRH.

4,608,366

ORAL CYCLODEXTRIN AND MOBENZOXAMINE PREPARATION

Takahito Hasegawa, and Hideo Adachi, both of Takayama, Japan, assignors to Taiyo Pharmaceutical Industry Co., Ltd., Takayama, Japan

Filed May 30, 1985, Ser. No. 739,275
Claims priority, application Japan, Mar. 11, 1985, 60-47642
Int. Cl.[4] A61K *31/73*
U.S. Cl. 514—58 1 Claim



1. An orally administratable mobenzoxamine complex comprising a clathrate compound of mobenzoxamine or a salt thereof and cyclodextrin, wherein the ratio of mobenzoxamine or the salt thereof to cyclodextrin ranges from 1:1 to 1:4 by molar ratio.

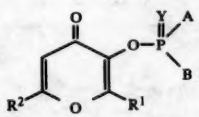
4,608,367

γ-PYRONE PHOSPHORIC ESTER DERIVATIVES AND INSECTICIDAL AND MITICIDAL COMPOSITIONS THEREOF

Yoshinori Endo, Naruto, and Hisashi Takao, Tokushima, both of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Filed Jul. 25, 1985, Ser. No. 758,735
Claims priority, application Japan, Jul. 31, 1984, 59-162078
Int. Cl.[4] A01N *57/02;* C07F *9/165, 9/24, 9/65*
U.S. Cl. 514—89 5 Claims

1. γ-Pyrone phosphoric ester derivative represented by the general formula



[I]

wherein R^1 is hydrogen, lower alkyl group, lower alkenyl group, cycloalkyl group or phenyl group, R^2 is hydrogen or lower alkyl group unsubstituted or substituted with halogen atom, A is $—SR^3$ or $—NR^4R^5$, B is OR^6, R^3 being lower alkyl group, cycloalkyl group or phenyl group, R^4 being hydrogen or lower alkyl group, R^5 being lower alkyl group, lower alkenyl group, cycloalkyl group, phenyl group or benzyl group, R^4 and R^5 may link to form piperidino or morpholino group, R^6 being lower alkyl group, cycloalkyl group or phenyl group, Y is oxygen or sulfur atom.

2. An insecticidal or miticidal composition comprising, as an effective component for agricultural and horticultural uses, γ-pyrone phosphoric ester derivative as claimed in claim 1, in association with an acceptable carrier or diluent.

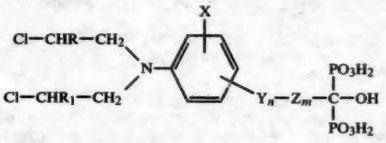
4,608,368

1-HYDROXY-1,1-DIPHOSPHONIC ACIDS AND CYTOSTATIC USE THEREOF

Helmut Blum, Duesseldorf; Wolfgang Greb, Duesseldorf-Kaiserswerth; Hinrich Moeller, Monheim; Dietrich Schmaehl, Heidelberg; Harald Schnegelberger, Leichlingen; Hannsjoerg Sinn, Wiesloch, and Franz Wingen, Heidelberg, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 10, 1985, Ser. No. 753,479
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425812
Int. Cl.[4] C07F *9/38;* A61K *31/135, 31/085, 31/10*
U.S. Cl. 514—107 11 Claims

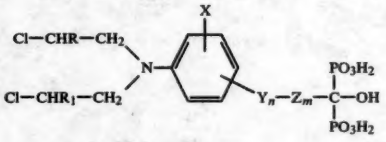
1. A 1-hydroxy-1,1-diphosphonic acid compound of the formula



(I)

wherein R and R_1 can be the same or different and are hydrogen or methyl, x is hydrogen, halogen, an amino group optionally substituted with a lower acyl group, a lower alkyl group optionally substituted with an amino group or a lower acyl substituted amino group, or a lower alkoxy group, Y is O, S or NH, Z is a straight or branched chain C_1–C_{10} alkylene group optionally substituted with an amino group or a lower acyl substituted amino group, m and n are the integers 0 or 1 with the proviso that when n is 1, m is also 1; and pharmaceutically acceptable acid or base addition salts thereof.

7. A method of inhibiting cell growth in a mammal comprising treating said mammal with a cell growth-inhibiting quantity of a 1-hydroxy-1,1-diphosphonic acid compound of the formula



(I)

wherein R and R_1 can be the same or different and are hydrogen or methyl, x is hydrogen, halogen, an amino group optionally substituted with a lower acyl group, a lower alkyl group optionally substituted with an amino group or a lower acyl substituted amino group, or a lower alkoxy group, Y is O, S or NH, Z is a straight or branched chain C_1–C_{10} alkylene group optionally substituted with an amino group or a lower acyl substituted amino group, m and n are the integers 0 or 1 with the proviso that when n is 1, m is also 1; or a pharmaceutically acceptable acid or base addition salt thereof.

4,608,369

TRITHIOPHOSPHORIC ACID ESTER AS A SOIL PESTICIDE

Haruyasu Yamamoto, Takarazuka, and Takayuki Okabe, Nishinomiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 31, 1984, Ser. No. 666,324
Claims priority, application Japan, Nov. 4, 1983, 58-207786; Dec. 16, 1983, 58-238338
Int. Cl.[4] A01N *57/04;* C07F *9/165*
U.S. Cl. 514—144 5 Claims

1. A trithiophosphoric acid ester of the formula:

wherein R is lower alkyl, R_1 is methyl and R_2 is isobutyl.

4. A method for controlling soil pests which comprises applying a pesticidally effective amount of the trithiophosphoric acid ester according to claim 1 to the soil pests.

4,608,370

SKIN FORMULATION

Richard B. Aronsohn, 10571 Wyton Dr., Los Angeles, Calif. 90024

Filed Mar. 4, 1985, Ser. No. 707,862
Int. Cl.[4] A61K 7/48
U.S. Cl. 514—159 4 Claims

1. A face treating composition effective when applied to the face to cause the epidermis to dry up and producing light peeling of dead surface skin, without any substantial irritating effect to the skin, which consists essentially of about 3 to about 7 parts salicylic acid, about 8 to about 12 parts resorcinol, about 8 to about 12 parts lactic acid and about 60 to about 90 parts ethyl alcohol, by weight.

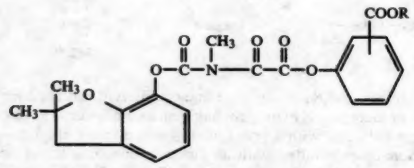
4,608,371

COMBATING INSECTS WITH CERTAIN 2,3-DIHYDRO-2,2-DIMETHYL-7-BENZOFURANYL N-OXALYL-N-METHYL CARBAMATES

Narayana M. Mallipudi, Lawrenceville, N.J., and John G. Hollingshaus, Yardley, Pa., assignors to American Cyanamid Company, Stamford, Conn.

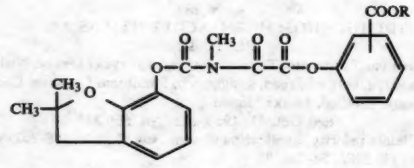
Filed Mar. 11, 1985, Ser. No. 710,796
Int. Cl.[4] A01N 47/22; C07D 307/86
U.S. Cl. 514—186 13 Claims

1. A compound having the formula



wherein R is H; C_1–C_4 lower alkyl, benzyl and salts of the free acid.

9. A method for controlling insects comprising applying to the insects, their habitat or food supply an insecticidally effective amount of a compound having the formula



wherein R is H; C_1–C_4 lower alkyl, benzyl and salts of the free acid.

4,608,372

PROCESS FOR PREPARING β′ FORM OF COPPER 8-HYDROXYQUINOLINE

Bernard Muller, St-Germain-en-Laye; René Piat, Bois-Guillaume; Cornelis Rensing, Oissel, and Jean-Paul Trajin, Rouen, all of France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 572,606, Jan. 20, 1984, Pat. No. 4,517,362, which is a continuation of Ser. No. 393,219, Jun. 28, 1982, abandoned. This application Feb. 12, 1985, Ser. No. 700,855
Claims priority, application France, Jul. 6, 1981, 81 13249
Int. Cl.[4] C07D 215/30; A01N 55/02
U.S. Cl. 514—187 9 Claims

1. A stabilized composition comprising β′ form of copper 8-hydroxyquinoline and a hydration initiator selected from the group consisting of 8-hydroxyquinoline-5-sulfonic acid and salts thereof, halosub-stituted 8-hydroxyquinoline-5-sulfonic acid and salts thereof, and of 7-iodo-8-hydroxyquinoline-5-sulfonic acid and its salts.

2. A fungicidal composition which comprises an effective amount of β′ form of copper 8-hydroxyquinoline and a hydration inhibitor is selected from the group consisting of 8-hydroxyquinoline-5-sulfonic acid and salts thereof, halosubstituted 8-hydroxyquinoline-5-sulfonic acid and salts thereof, and of 7-iodo-8-hydroxyquinoline-5-sulfonic acid as its salts and an inert carrier material.

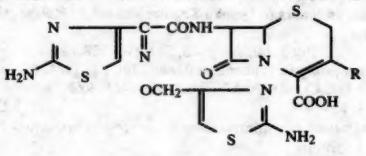
4,608,373

CEPHEM COMPOUNDS

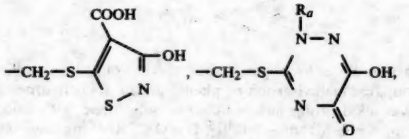
Tadao Shibanuma; Kohji Nakano; Noriaki Nagano; Yukiyasu Murakami, all of Saitama, and Ryuichiro Hara, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

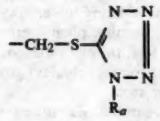
Filed Dec. 12, 1983, Ser. No. 560,412
Claims priority, application Japan, Dec. 13, 1982, 57-218208; Mar. 28, 1983, 58-52067; Mar. 28, 1983, 58-52068; Oct. 7, 1983, 58-188619; Oct. 11, 1983, 58-189555
Int. Cl.[4] C07D 501/34; A61K 31/545
U.S. Cl. 514—202 7 Claims

1. A cephem compound represented by the formula

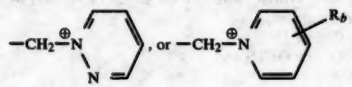


wherein R represents a lower alkyl group, which may be substituted by a lower acyloxy group, a lower alkylthio group,





(wherein R_a represents a hydrogen atom or a lower alkyl group),



[wherein R_b represents a hydrogen atom, $(CH_2)_mCOOH$, $(CH_2)_mOH$, $(CH_2)_mNH_2$, $(CH_2)_mSO_3H$, or CONH—R' (R' represents a hydrogen atom, a hydroxy group, or $(CH_2)_nCOOH$, m represents 0 or an integer of 1 to 3; and n represents an integer of 1 to 3)] and salts thereof.

4,608,374

11-SUBSTITUTED 5H,11H-PYRROLO[2,1-C][1,4]BENZOXAZEPINES AS ANTIPSYCHOTIC AND ANALGESIC AGENTS

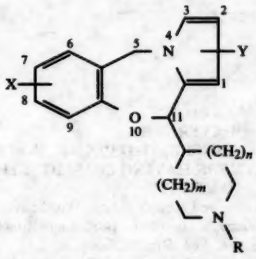
Richard C. Effland, Bridgewater; Larry Davis, Sergeantsville, and Kevin J. Kapples, Warren, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Nov. 7, 1983, Ser. No. 549,098

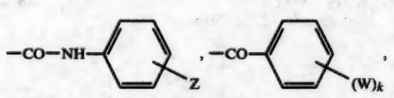
Int. Cl.[4] A61K *31/40;* **C07D** *498/04, 401/06, 403/06*

U.S. Cl. 514—211 **98 Claims**

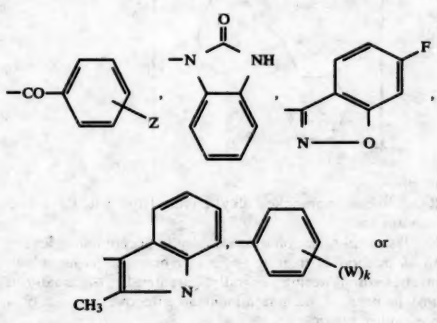
1. A compound of the formula



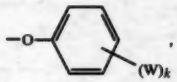
where m and n are each independently 0, 1 or 2 and m+n is 1 or 2, X and Y are each independently hydrogen, loweralkyl or halogen, and R is hydrogen, cyano, —C(NH$_2$)NOH,



unsubstituted loweralkyl, or substituted loweralkyl having one to three substituents each of which being independently cyano, hydroxy, cyclohexyl, furyl, thienyl,



-continued



k being 1, 2 or 3, W being each independently hydrogen, halogen, hydroxy, loweralkyl, trifluoromethyl, loweralkoxy, nitro, amino, diloweralkylamino, phenoxy, or benzyloxy, and Z being hydrogen, loweralkyl or halogen, or a pharmaceutically acceptable acid addition salt thereof.

4,608,375

QUINAZOLINONE DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Ikuo Ueda, Uenohigashi, and Masayuki Kato, Minoo, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

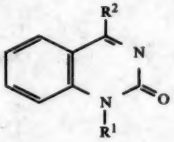
Filed Jun. 21, 1984, Ser. No. 622,881

Claims priority, application Japan, Jun. 27, 1983, 58-116732

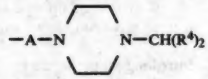
Int. Cl.[4] A61K *31/445;* **C07D** *239/82, 403/12*

U.S. Cl. 514—218 **6 Claims**

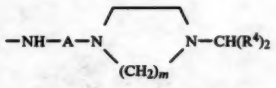
1. New quinazolinone derivatives of the formula:



wherein R^1 is lower alkyl or a group of the formula:



wherein A is lower alkylene and R^4 is aryl, R^2 is amino, lower alkylamino or a group of the formula:



wherein A and R^4 are each as defined above and m is an integer of 2 or 3, and pharmaceutically acceptable salts thereof.

5. An antiallergic pharmaceutical composition comprising an effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof as an effective ingredient, in association with a pharmaceutically acceptable, substantially nontoxic carrier or excipient.

4,608,376

OPIATE AGONISTS AND ANTAGONISTS

Gavril W. Pasternak, New York, N.Y., assignor to Carolyn McGlanis, New York, N.Y.

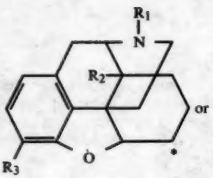
Continuation-in-part of Ser. No. 312,018, Oct. 16, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,630

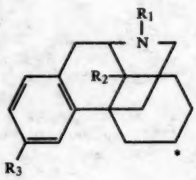
Int. Cl.[4] C07D *491/22, 471/18;* **A61K** *31/485*

U.S. Cl. 514—282 **3 Claims**

1. Dihydromorphinone compound of the general formula

wherein

HDM is  or



R1 is alkyl with 1 to 10 carbon atoms or alkenyl of 2 to 10 carbon atoms,
R2 is OH or H,
R3 is OH,

R is $-N{=}R_4$, $-NH-R_5$, $-NHC(CH_2)_nCNHN{=}R_4$ or

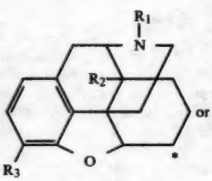
$-NHCCH{=}CHCNHN{=}R_4$,

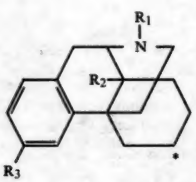
R4 is HDM, alkenylidene with 2 to 10 carbon atoms, or cycloalkenylidene of up to 6 carbon atoms,
R5 is phenyl, alkyl of 1 to 4 carbon atoms, alkenyl with 2 to 10 carbon atoms, cycloalkyl of up to 6 carbon atoms, or cycloalkenyl of up to 6 carbon atoms and
n is 1–10.

2. Method of controlling appetite comprising selectively and/or irreversibly blocking the mu1 opiate receptors by administering an effective amount of a dihydromorphinone compound of the formula

HDM=N—R

wherein

HDM is  or



wherein

• indicates binding carbon
R1 is alkyl with 1 to 10 carbon atoms or alkenyl of 2 to 10 carbon atoms,
R2 is OH or H
R3 is OH or OCH_3 and

R is $-N{=}R_4$, $-NH-R_5$, $-NHC(CH_2)_nCNHN{=}R_4$ or

$-NHCCH{=}CHCNHN{=}R_4$,

R4 is HDM, alkenylidene with 2 to 10 carbon atoms, or cycloalkenylidene of up to 6 carbon atoms,
R5 is phenyl, alkyl of 1 to 4 carbon atoms, alkenyl with 2 to 10 carbon atoms, cycloalkyl of up to 6 carbon atoms, or cycloalkenyl of up to 6 carbon atoms and
n is 1–10.

3. Method of reducing opiate dependency in an addict comprising administering an effective amount of the compound of claim 1.

4,608,377

QUATERNARY 6,11-DIHYDRO-DIBENZO-[B,E]-THIEPINE-11-N-ALKYL-NORSCOPINE ETHERS HAVING SPASMOLYTIC ACTIVITY

Rolf Banholzer, Ingelheim, and Rudolf Bauer, Wiesbaden, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 471,353, Mar. 2, 1983, abandoned. This application Jun. 25, 1984, Ser. No. 623,963

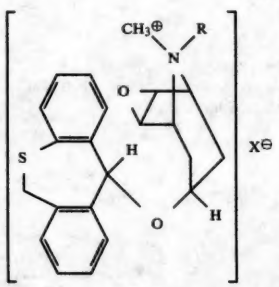
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211185

Int. Cl.[4] C07D *491/08;* A61K *31/46*

U.S. Cl. 514—291 **18 Claims**

1. A compound of the formula

(I)



wherein
R is a linear or branched alkyl having from 1 to 10 carbon atoms and
$X^{(-)}$ is a non-toxic, pharmacologically acceptable anion.

18. A method of treating spasms or bronchospasms which comprises administering perorally, parenterally, or rectally to a host in need of such treatment an effective amount of a compound of claim 1.

4,608,378
TETRAHYDROISOXAZOLO[4.5-c]PYRIDINE DERIVATIVES USEFUL IN THE TREATMENT OF MALFUNCTIONS OF THE ACETYLCHOLINE OR MUSCARINIC SYSTEMS

Erik Falch, Vedbaek; Povl Krogsgaard-Larsen, Allerod; Per Sauerberg, Copenhagen-Valby; Anne V. Christensen, Farum, and Jens-Jorgen Larsen, Hillerod, all of Denmark, assignors to H. Lundbeck A/S, Copenhagen-Valby, Denmark

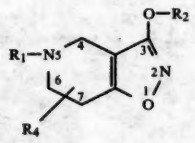
Filed May 18, 1984, Ser. No. 611,697

Claims priority, application United Kingdom, May 24, 1983, 8314391

Int. Cl.[4] A61K *31/44;* C07D *498/04*

U.S. Cl. 514—302 16 Claims

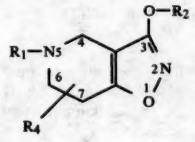
1. A tetrahydroisoxazolo 4,5-c pyridine derivative selected from those having the following formula:



I

wherein R_1 is hydrogen, C1–C6 alkyl or phenyl-lower alkyl, in which the phenyl group may be substituted with halogen, lower-alkyl, or lower-alkoxy; R_2 is C1–C6 alkyl, C1–C6 alkenyl, C1–C6 alkynyl, or phenyl-lower alkyl, in which the phenyl group may be substituted with halogen, lower-alkyl, or lower-alkoxy, and R_4 is hydrogen or C1–C6 alkyl, or a pharmaceutically-acceptable acid addition salt thereof, provided that R2 cannot be C1–C6 alkyl when both R1 and R4 are hydrogen.

14. Method for the treatment of a disorder, caused by malfunction of the acetycholine or muscarinic system, comprising the step of administering to a subject in need thereof a compound of the formula



I

wherein R_1 is hydrogen, C1–C6 alkyl or phenyl-lower alkyl, in which the phenyl group may be substituted with halogen, lower-alkyl, or lower-alkoxy; R_2 is C1–C6 alkyl, C1–C6 alkenyl, C1–C6 alkynyl, or phenyl-lower alkyl, in which the phenyl group may be substituted with halogen, lower-alkyl, or lower-alkoxy, and R_4 is hydrogen or C1–C6 alkyl, or a pharmaceutically-acceptable acid addition salt thereof, in an amount effective for alleviation of said disorder.

4,608,379
ANTIFUNGAL COMPOSITION AND METHOD EMPLOYING PYRIDINIUM COMPOUNDS

John T. A. Boyle, Cookham, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

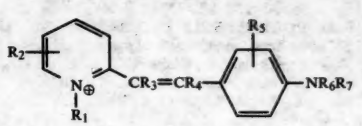
Filed Sep. 5, 1984, Ser. No. 647,577

Claims priority, application United Kingdom, Sep. 7, 1983, 8323949

Int. Cl.[4] A01N *43/40, 43/84*

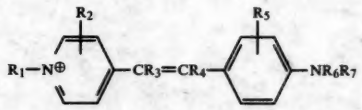
U.S. Cl. 514—318 22 Claims

2. A method of treatment of a subject in need of anti-fungal therapy, which comprises administration of an effective amount of a compound that contains a cation having the formula Ia or Ib



(Ia)

or



(Ib)

(in which R_1 is selected from alkyl containing 3 to 20 carbon atoms and phenyl lower alkyl; R_2 and R_5 are independently selected from hydrogen, lower alkyl, lower alkoxy, halogen and nitro; R_3 and R_4 are independently selected from hydrogen and lower alkyl; R_6 and R_7 when separate, are independently selected from lower alkyl and phenylloweralkyl; and R_6 and R_7, when joined together, represent a group selected from those having the formula II

$$—(CH_2)_2—A—(CH_2)_2— \quad (II)$$

(where A is selected from $—(CH_2)_n—$, O, S and NR_8 where n is selected from 0, 1 and 2 and R_8 is lower alkyl and their mono- and di- (lower alkyl) substitution products) and a pharmaceutically acceptable anion to the said subject.

4,608,380
SUBSTITUTED AMINOPYRIDONES HAVING HISTAMINE H_2-RECEPTOR BLOCKING ACTIVITY

Thomas H. Brown, Tewin, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

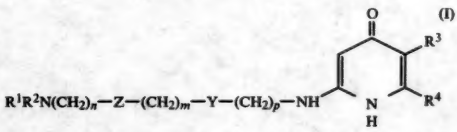
Filed Nov. 28, 1984, Ser. No. 675,661

Claims priority, application United Kingdom, Dec. 1, 1983, 8332091

Int. Cl.[4] C07D *211/86;* A61K *31/44, 31/445*

U.S. Cl. 514—318 21 Claims

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein R^1 and R^2 together represent $—(CH_2)q—$ wherein q is 4 to 6, to form together with the nitrogen atom to which they are attached a 5–7 membered saturated ring, optionally substituted by C_{1-6}alkyl;

n is an integer from 1 to 6;

Z is 1,3-phenylene, 1,4-phenylene, 2,4-pyridyl (wherein the $R^1R^2N(CH_2)_n$ group is in the 4-position);

m is zero or one;

Y is oxygen, sulphur or methylene;

p is two, three or four; and

R^3 is hydrogen, C_{1-6}alkyl or aryl(C_{1-6})alkyl and R^4 is hydrogen or C_{1-6}alkyl.

16. A method of blocking histamine H_2-receptors which comprises administering to an animal an effective amount to block said receptors of a compound of claim 1.

4,608,381

ANTIINFLAMMATORY 2-(TRIFLUOROETHYLSULFONYL)BENZIMIDAZOLES

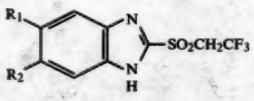
Edward S. Lazer, Trumbull, Conn., assignor to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Filed May 30, 1985, Ser. No. 739,402

Int. Cl.[4] A61K *31/415;* **C07D** *235/28*

U.S. Cl. 514—395 **34 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are each independently hydrogen, halogen or C_1–C_2 lower alkyl or a nontoxic, pharmaceutically acceptable salt thereof.

4,608,382

2-(SULPHINYL AND SULFONYL)-4(5)-PHENYL-5(4)-(3'-PYRIDYL)-IMIDAZOLS

Pier G. Ferrini, Binningen, and Richard Göschke, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

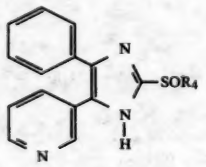
Continuation of Ser. No. 321,840, Nov. 16, 1981, Pat. No. 4,461,770, which is a continuation of Ser. No. 200,880, Oct. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 134,802, Mar. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 025,310, Mar. 30, 1979, abandoned, and a continuation-in-part of Ser. No. 186,038, May 11, 1980, abandoned. This application Mar. 9, 1984, Ser. No. 588,025

Claims priority, application Luxembourg, Apr. 11, 1978, 79412

Int. Cl.[4] A61K *31/44;* **C07D** *401/04*

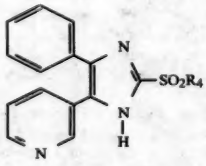
U.S. Cl. 514—341 **8 Claims**

1. A compound selected from the group consisting of (i) a 2-sulfinyl-4(5)-phenyl-5(4)-(pyrid-3-yl)-imidazole of the formula:



wherein R_4 is methyl or ethyl;

(ii) a 2-sulfonyl-4(5)-phenyl-5(4)-(pyrid-3-yl)imidazole of the formula:



wherein R_4 is methyl or ethyl;

(iii) the N-oxides thereof; and

(iv) the pharmaceutically acceptable salts thereof.

4,608,383

CARDIOACTIVE PYRAZOLE AND IMIDAZOLE ARYLOXYPROPANOLAMINES

Fritz Wiedemann, deceased, late of Weinheim-Lutzel (by Ingrid Wiedmann, heiress); Wolfgang Kampe, Heddesheim; Karl Dietmann, deceased, late of Mannheim (by Lieselotte Dietmann, heiress), and Gisbert Sponer, Laudenbach, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

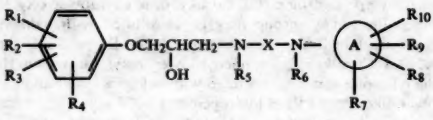
Continuation-in-part of Ser. No. 273,543, Jun. 15, 1981, Pat. No. 4,438,128. This application Oct. 3, 1983, Ser. No. 538,693

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1980, 3023369

Int. Cl.[4] A61K *31/415, 31/505;* **C07D** *231/38, 231/54, 239/42, 239/54, 233/88, 233/48*

U.S. Cl. 514—407 **10 Claims**

1. An aryloxypropanolamine of the formula



wherein

R_1, R_2, R_3 and R_4, which may be the same or different, are hydrogen or halogen atoms or lower alkyl, cyano, carboxamide, hydroxyl, lower acyloxy, lower alkoxy, lower alkenyloxy or aryl lower alkoxy radicals,

R_5 and R_6, which may be the same or different, are hydrogen atoms or lower alkyl radicals,

X is a straight or branched alkylene chain having 2 to 6 carbon atoms,

A is a pyrazole or imidazole group attached to the —X—NR_6— chain through a ring carbon atom or a partially hydrogenated pyrazole or imidazole group attached to the —X—NR_6— chain through a ring carbon atom but not a fully hydrogenated monocyclic and

R_7, R_8, R_9 and R_{10}, which may be the same or different are mono or divalent substituents selected from hydrogen, halogen, nitro, hydroxylamino, amino, lower acylamino, lower alkylamino, di-(lower alkyl)-amino, hydroxyethylamino, di-(hydroxyethyl)amino, hydroxyl, lower alkoxy, allyloxy, methoxy lower alkoxy, cyano, carboxamido, carboxy, methoxy lower alkoxycarbonyl, hydroxymethyl, lower alkoxymehtyl, halomethyl, aminomethyl, lower acylaminomethyl, di-(lower alkyl-aminomethyl, pyrrolidinomethyl, piperidinomethyl, di-(hydroxyethyl)-aminomethyl, morpholinomethyl, piperazinomethyl, 4-lower acylpiperazinomethyl, 4-lower alkylpiperazinomethyl, lower alkyl, lower alkenyl, 2-cyanoethyl, 2-(lower alkoxycarbonyl)-ethyl, 2-carboxyethyl, 2-hydroxyethyl, phenyl lower alkyl and phenyl, the phenyl radicals being optionally substituted with 1 or 2 -hydroxyl or methoxy radicals, oxygen or sulphur, with the exception of mixed alkoxy and hydroxy substituents on the pyrazole, imidazole or phenyl groups or a pharmacologically compatible salt thereof.

9. A method of combating cardiac and circulatory diseases comprising administering to a patient suffering therefrom an amount effective therefor of a compound or salt according to claim 1.

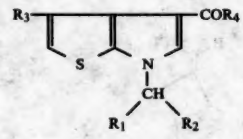
4,608,384

THIENO[2,3-B] PYRROLE COMPOUNDS AND ANALGESIC USE THEREOF

Michel Wierzbicki, Puteaux, and Jacques Buré, Neuilly sur Seine, both of France, assignors to Adir, S.A.R.L., Neuilly-sur-Seine, France

Filed Dec. 12, 1983, Ser. No. 560,419
Claims priority, application France, Dec. 16, 1982, 82 21090
Int. Cl.[4] C07D *495/04;* A61K *31/38*
U.S. Cl. 514—413 13 Claims

1. A compound selected from the group consisting of: thieno[2,3-b]pyrrole compounds of the formula:



(I)

in which

R_1 is selected from the group consisting of hydrogen, and straight and branched alkyl having from 1 to 5 carbon atoms inclusive

R_2 is selected from the group consisting of:

carboxy,

COOM in which M is selected from the group consisting of alkali metals, ammonium, mono-, di-, and tri- (C_1–C_5) alkylammonium and these radicals mono-substituted by hydroxy;

COOR in which R is selected from the group consisting of alkyl having from 1 to 5 carbon atoms inclusive

R_3 is selected from the group consisting of straight and branched alkyl having from 1 to 5 carbon atoms inclusive

R_4 is selected from the group consisting of and alkyl having from 1 to 5 carbon atoms inclusive phenyl, halophenyl, (C_1–C_5) alkylphenyl and (C_1–C_5)alkoxyphenyl.

13. A method for treating a living animal body afflicted with pain comprising the step of administering to the said living animal an effective analgesic amount of a compound of claim 1 which is effective for the alleviation of the said condition.

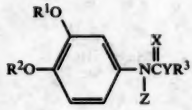
4,608,385

FUNGICIDAL N-PHENYLCARBAMATES

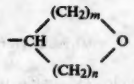
Hiroshi Noguchi, Toyonaka; Toshiro Kato, Takarazuka; Junya Takahashi, Nishinomiya; Yukio Ishiguri, Takarazuka; Shigeo Yamamoto, Ikeda, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 22, 1982, Ser. No. 436,073
Claims priority, application Japan, Oct. 29, 1981, 56-174043; Jan. 19, 1982, 57-7257
Int. Cl.[4] C07C *155/02, 155/08;* A01N *47/10, 43/08*
U.S. Cl. 514—444 42 Claims

1. A fungicidal composition which comprises as an active ingredient a fungicidally effective amount of an N-phenylcarbamate of the formula:

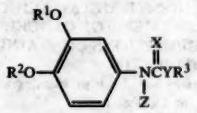


wherein R^1 and R^2 are, same or different, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or a lower alkyl group substituted with at least one member selected from the group consisting of halogen, lower alkoxy and lower cycloalkyl; R^3 is a C_1–C_8 alkyl group, a C_3–C_8 alkenyl group, a C_3–C_8 alkynyl group, lower cycloalkyl group, a lower haloalkenyl group, a lower haloalkynyl group, a lower aralkyl group, a lower alkyl group substituted with at least one member selected from the group consisting of halogen, cyano, lower alkoxy, lower alkenyloxy, lower haloalkoxy, phenoxy, lower aralkyloxy and lower cycloalkyl, or a group of the formula:



in which m is 0, 1 or 2, n is 1, 2 or 3; X and Y are, same or different, an oxygen atom or a sulfur atom; and Z is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower cycloalkyl group, a lower haloalkenyl group, a lower alkyl group substituted with at least one member selected from the group consisting of halogen, cyano, lower alkoxy and lower alkoxycarbonyl, or a group of the formula: —COR^4 or —SO_2R^4 in which R^4 is a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower cycloalkyl group, a lower haloalkenyl group, a lower alkyl group substituted with at least one member selected from the group consisting of halogen, cyano, lower alkoxy, lower cycloalkyl and phenoxy (phenoxy being optionally substituted with at least one halogen and/or at least one alkyl), a phenyl group, a furyl group, a thienyl group, a phenyl group substituted with at least one member selected from the group consisting of halogen, cyano, nitro, trifluoromethyl, lower alkyl and lower alkoxy, or an aralkyl group (aralkyl being optionally substituted with at least one halogen and/or at least one alkyl), with the proviso that when R^1 is methyl, R^2 is neither methyl nor butyl, and an inert carrier or diluent.

17. A method for controlling plant pathogenic fungi which comprises applying a fungicidally effective amount of at least one of the N-phenylcarbamates of the formula:



wherein R^1, R^2, R^3, X, Y and Z are each as defined in claim 1, to plant pathogenic fungi.

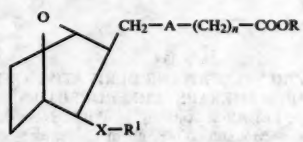
4,608,386

7-OXABICYCLOHEPTANE ETHERS USEFUL IN THE TREATMENT OF THROMBOTIC DISEASES

Steven E. Hall, Ewing Township, Mercer County, and Wen-Ching Han, Trenton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 26, 1985, Ser. No. 727,965
Int. Cl.[4] A61K *31/335, 31/557;* C07D *307/00*
U.S. Cl. 514—469 14 Claims

1. A compound of the structure



including all stereoisomers thereof, wherein

A is —CH=CH— or —CH_2—CH_2—;

n is 0 to 8;

X is O or

wherein

q is 0, 1 or 2;

R is H, lower alkyl, alkali metal or tris(hydroxymethyl-)aminomethane; and

R^1 is lower alkyl, aryl, arylalkyl, cycloalkyl, cycloalkylalkyl, lower alkenyl containing 2 to 12 carbons or lower alkynyl containing 2 to 12 carbons, wherein lower alkyl or alkyl alone or as part of another group contains 1 to 12 carbons and is unsubstituted or is substituted with halo, hydroxy, alkylamino, alkylthio, CF_3, alkoxy, aryl, alkylaryl, haloaryl, cycloalkyl or alkylcycloalkyl;

aryl alone or as part of another group contains 6 to 10 carbons in the ring portion and is unsubstituted or is substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens, aryl, 1 or 2 hydroxy groups, 1 or 2 lower alkoxy groups, 1 or 2 alkylamino groups or 1 or 2 alkylthio groups;

cycloalkyl alone or as part of another group contains 3 to 12 carbons and is unsubstituted or is substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups, 1 or 2 hydroxyl groups, 1 or 2 alkylamino groups, an aryl group, or 1 or 2 alkylthio groups; and

$(CH_2)_n$ may contain 1 or 2 lower alkyl or halo substituents.

14. A method of inhibiting platelet aggregation or inhibiting bronchoconstriction associated with asthma, which comprises administering to a mammalian host an effective amount of a compound as defined in claim **1** or a pharmaceutically acceptable salt thereof.

4,608,387

USE OF CYCLOPENTADIENYL METAL-ACIDO COMPLEXES FOR THE TREATMENT OF CANCER AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAID COMPLEXES

Hartmut Köpf, and Petra Köpf-Maier, both of Bundesring 33, D-1000 Berlin 42, Fed. Rep. of Germany

Continuation of Ser. No. 135,442, Mar. 31, 1980, abandoned. This application Oct. 3, 1983, Ser. No. 538,539

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923334

Int. Cl.[4] **A61K** *31/28*

U.S. Cl. 514—492 **16 Claims**

1. A pharmaceutical composition, consisting essentially of: 0.01 to 95% by weight of a cyclopentadienyl metal-acido complex selected from the group consisting of $(C_5H_5)_2TiX_2$, $(C_5H_5)_2VX_2$, $(C_5H_5)_2MoX_2$, $(C_5H_5)_2NbX_2$, $(C_5H_5)_2TaX_2$, $(C_5H_5)_2WX_2$, $(C_5H_5)TiX_3$, $(C_5H_5)_2Ti(NCS)_2$, $(C_5H_5)TI(NCS)_3$, $(C_5H_5)(C_5H_4C_2H_5)TiX_2$, $[C_5H_4Ge(CH_3)_3]_2TiX_2$, $(CH_3)HC(C_5H_4)_2TiX_2$, $(CH_3)_2Ge(C_5H_4)_2TiX_2$, $(C_9H_7)_2TiX_2$, $[C_5H_3(CH_2)_4]_2TiX_2$, $[C_5H_3(CH_2)_4](C_5H_5)TiX_2$ and $[(C_5H_5)_2TiX]_20$ wherein each X, which may be the same or different, is a halogen atom; and a sterile non-toxic pharmaceutically acceptable vehicle therefor.

4,608,388

NOVEL [4,2,0]BICYCLOOCTANE DERIVATIVES WITH VALUABLE THERAPEUTIC PROPERTIES

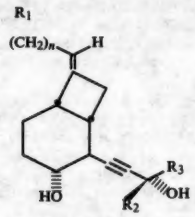
Arthur F. Kluge, Los Altos; Anthony L. Willis, Newark, and Counde O'Yang, Mountain View, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 27, 1985, Ser. No. 716,872

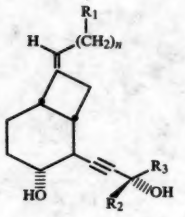
Int. Cl.[4] **C07C** *69/74*

U.S. Cl. 514—510 **55 Claims**

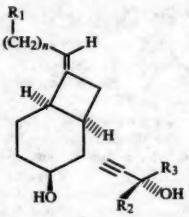
1. A compound of formula (1), (2) or (3)



(1)



(2)



(3)

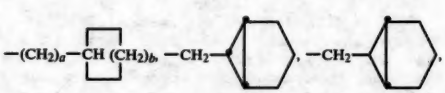
wherein:

n is 2 or 3;

R_1 is CH_2OH, CHO, CO_2R or CO_2H;

R_2 is hydrogen or methyl; and

R_3 is linear or branched alkyl having 5–10 carbon atoms,



or $-(CH_2)_m-$phenyl

optionally substituted with lower alkyl, lower alkoxy, trifluoromethyl, or halogen,

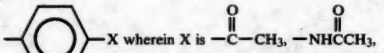
in which

a is 0, 1 or 2;

b is 3–7;

m is 1 or 2; and

R is



in which each R_4 is independently hydrogen or lower alkyl having 1–6 carbon atoms,

and the pharmaceutically acceptable, non-toxic salts and esters thereof.

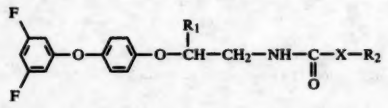
4,608,389

CARBAMATE COMPOUNDS AND THEIR USE AS INSECTICIDES

Hirosi Kisida, Takarazuka; Makoto Hatakoshi, Mino, and Sumio Nishida, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 10, 1984, Ser. No. 639,500
Claims priority, application Japan, Sep. 7, 1983, 58-165751
Int. Cl.[4] C07C *125/065*; A01N *47/12*
U.S. Cl. 514—539 15 Claims

1. A compound of the formula:



wherein R_1 is a hydrogen atom or a methyl group, R_2 is an ethyl group and X is an oxygen atom.

4. An insecticidal composition which comprises as an active ingredient an insecticidally effective amount of the compound according to claim 1, and an appropriate solid or liquid carrier(s) or diluent(s).

7. A method for controlling harmful insects which comprises applying an insecticidally effective amount of the compound according to claim 1 to the harmful insects.

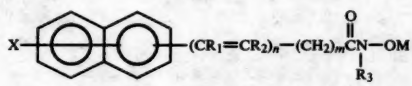
4,608,390

LIPOXYGENASE INHIBITING COMPOUNDS

James B. Summers, Jr., Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1985, Ser. No. 727,465
Int. Cl.[4] C07C *83/10*; A61K *31/185, 31/04*
U.S. Cl. 514—575 21 Claims

1. A compound of the formula



where

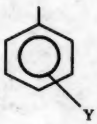
X is selected from hydrogen, C_1 to C_{22} alkyl or alkenyl, or an electron withdrawing group;

n is 1 and m=0, 1, 2 or 3;

R_1 and R_2 independently are hydrogen, C_1 to C_6 alkyl, an electron withdrawing group, or R_4;

R_3 is H, C_1 to C_6 alkyl or cycloalkyl, or R_4; and

R_4 independently at each occurrence, has the formula



where Y is hydrogen or an electron withdrawing group; and wherein M is a pharmaceutically acceptable cation.

9. A method of inhibiting lipoxygenase activity in a human or lower animal host in need of such treatment, comprising administering to the human or lower animal host a compound according to claim 1 in an amount effective to inhibit lipoxygenase activity in the host.

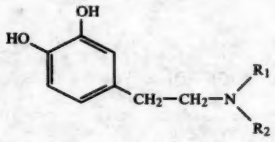
4,608,391

CATECHOLAMINE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

James Z. Ginos, and George C. Cotzias, both of New York, N.Y., assignors to Cornell Research Foundation Inc., Ithaca, N.Y.

Division of Ser. No. 812,854, Jul. 5, 1977, Pat. No. 4,181,738, which is a continuation of Ser. No. 746,026, Nov. 30, 1976, abandoned. This application Apr. 16, 1979, Ser. No. 30,578
Int. Cl.[4] A61K *31/135*; C07C *91/32*
U.S. Cl. 514—654 49 Claims

1. A method of treatment of physical or physiological and behavioural health disorders, which are caused by or connected with disturbances of the dopamine household in mammals comprising the step of administering to a mammal 0.1 to 500 mg/kg of a compound of the formula

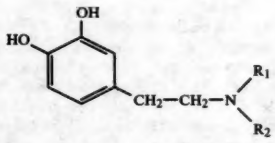


wherein

R_1 signifies a phenylalkyl group and

R_2 signifies an alkyl group, a cycloalkylalkyl group, a cycloalkyl group, or a phenylalkyl group, and the pharmaceutically acceptable salts thereof.

18. A compound of the formula



wherein R_1 and R_2 each are phenethyl, R_1 is phenethyl and R_2 is n-propyl, R_1 is o-chlorophenethyl and R_2 is methyl, R_1 is 4-(4-flourophenyl)butyl and R_2 is methyl, or R_1 is 10-(2-isopropylmethylphenyl)decyl and R_2 is methyl, and the pharmaceutically acceptable salts thereof.

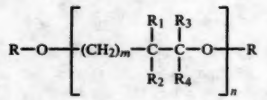
4,608,392

METHOD FOR PRODUCING A NON GREASY PROTECTIVE AND EMOLLIENT FILM ON THE SKIN

Bernard Jacquet, Antony, and Quintino Gaetani, Bondy, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Aug. 28, 1984, Ser. No. 645,156
Claims priority, application Luxembourg, Aug. 30, 1983, 84979
Int. Cl.[4] A61K *47/00*
U.S. Cl. 514—844 7 Claims

1. A cosmetic method for producing on the skin a matte film which is not greasy and for imparting a protective and emollient effect on the skin which comprises topically applying to the skin an effective amount of a cosmetic composition containing a fatty product, said fatty product being a polyether oligomer, having the formula



wherein

R represents linear or branched alkyl having 1–12 carbon atoms,

R_1, R_2, R_3 and R_4 each independently represent hydrogen or alkyl having 1–6 carbon atoms, wherein at least two of R_1, R_2, R_3 and R_4 represent hydrogen,

m is 1–4 and

n has an average value equal to or greater than 2, the number of carbon atoms in each repetitive unit being at least equal to 4,

said polyether oligomer having a molecular weight ranging from 200 to 5,000.

4,608,393

PROCESS FOR PRODUCING AN ION EXCHANGE MEMBRANE USING IRRADIATION BY IONIZING RADIATION FOLLOWED BY THERMAL POLYMERIZATION

Toshikatsu Hamano, Machida, Japan, assignor to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 6, 1985, Ser. No. 730,481

Claims priority, application Japan, May 11, 1984, 59-92925; May 11, 1984, 59-92926

Int. Cl.[4] C08D 5/20; C08F 8/00

U.S. Cl. 521—27 2 Claims

1. A process for producing an ion exchange membrane comprising impregnating a base material with a polymerizable monomer material and polymerizing the monomer material, if necessary, followed by a reaction for introducing ion exchange groups, wherein said base material is made of an olefin polymer and/or a fluorinated olefin polymer, said polymerizable monomer material is a mixture comprising styrene, chloromethylstyrene and divinylbenzene as three essential components, and the polymerizable monomer material impregnated in the base material is firstly partially polymerized to the extent of from 10 percent to 80 percent by irradiation with ionizing radiation, and subsequently is completely polymerized by heating in the presence of a polymerization initiator.

4,608,394

ANTI-STATIC STYRENE POLYMER PARTICLES BY IMPREGNATION

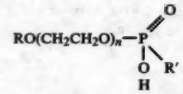
Alvin R. Ingram, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 791,479, Oct. 25, 1985. This application Jan. 13, 1986, Ser. No. 818,311

Int. Cl.[4] C08J 9/22

U.S. Cl. 521—57 5 Claims

1. A composition comprising a styrene polymer containing dispersed throughout 3 to 20 weight percent of a blowing agent and coated on the surface thereof by 0.1 to 0.4 percent of a mixture of esters having general formula



wherein R may be alkaryl groups, branched alkyl groups having at least 7 carbon atoms, or normal alkyl groups having at least 10 carbon atoms; n may be a positive integer of from 1 to 33; and R′ may be $RO(CH_2CH_2O)_n$- or hydroxyl group.

4,608,395

SILICONE SPONGE RUBBER COMPOSITION

Mitsuo Hamada, and Kazuo Higuchi, both of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Sep. 16, 1985, Ser. No. 776,549

Claims priority, application Japan, Oct. 31, 1984, 59-229493

Int. Cl.[4] C08V 9/00

U.S. Cl. 521—92 7 Claims

1. An organosiloxane composition exhibiting a useful pot life under ambient conditions and the ability to form cured sponge rubber when heated, said composition comprising

(A) 100 parts by weight of a polyorganosiloxane comprising units of the general formula

$$R_aSiO_{(4-a)/2}$$

and at least two units per molecule of the general formula

$$R^1{}_bR^2{}_cSiO_{(4-b-c)/2}$$

where R and R^1 represent monovalent hydrocarbon or substitued hydrocarbon radicals free of ethylenic unsaturation, R^2 represents an alkenyl radical, a represents an integer from 1 to 3, inclusive, b represents an integer from 0 to 2, inclusive, c is 1 or 2, and the sum of b and c is 1, 2 or 3;

(B) an organohydrogensiloxane comprising units of the general formula

$$R^3{}_dSiO_{(4-d)/2}$$

and at least two units per molecule of the general formula

$$R^4{}_eH_fSiO_{(4-e-f)/2}$$

where R^3 and R^4 are individually selected from the same group as R, d represents an integer from 1 to 3, inclusive, e represents an integer from 0 to 3, inclusive, f represents the integer 1, 2 or 3, the sum of e and f is 1, 2 or 3, and the concentration of (B) is equivalent to from 3 to 100 moles of silicon-bonded hydrogen atoms per mole of alkenyl radicals present in (A);

(C) from 0.1 to 50 parts by weight of an inorganic alkaline earth metal compound exhibiting a pH of at least 10.0;

(D) from 0.001 to 3 parts by weight of a platinum catalyst inhibitor; and

(E) an amount of a platinum-type catalyst sufficient to catalyze foaming and curing of said composition when heated.

4,608,396

METHOD OF PRODUCING ELASTOMERIC SILICONE FOAM

Therese M. Bauman; Chi-Long Lee, and James A. Rabe, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 787,857, Oct. 16, 1985, Pat. No. 4,593,049. This application Feb. 3, 1986, Ser. No. 825,494

Int. Cl.[4] C08J 9/14

U.S. Cl. 521—99 13 Claims

1. A foamable silicone composition comprising a composition obtained by mixing

(1) a vinyl containing polydiorganosiloxane having at least an average of about 2 vinyl radicals per molecule, the organic radicals being selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms per radical, phenyl, and vinyl,

(2) a hydroxylated polydiorganosiloxane having an average of from greater than 1 to 2.5 silicon-bonded hydroxyl radicals per molecule and having an average of at least one organic radical per silicon atom selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms per radical and phenyl,

(3) a platinum catalyst in an amount sufficient to give from 5

to 200 parts by weight platinum per one million parts by weight total mixture,

(4) an organohydrogensiloxane having an average of at least 3 silicon-bonded hydrogen atoms per molecule, an average of no more than one silicon-bonded hydrogen atom per silicon atom and organic radicals selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms per radical and phenyl,

(5) a profoamer consisting essentially of a resinous, benzene-soluble organosiloxane copolymer consisting essentially of $SiO_{4/2}$ units, silicon-bonded hydroxyl groups, $(CH_3)_3SiO_{1/2}$ units and fluorine-containing units selected from the group consisting of $R_aR'_bSiO_{(4-a-b)/2}$ and $R''[Si(R')_bO_{(3-b)/2}]_2$ and mixtures thereof, where R is a monovalent organic radical containing at least four perfluorinated carbon atoms and is bonded to the silicon atom of said fluorine-containing units by a sequence of at least two methylene units or by an oxygen atom that is, in turn, bonded to a sequence of at least two methylene units, R' is an alkyl radical containing from 1 to 3 carbon atoms, and R'' is a divalent organic radical containing at least four perfluorinated carbon atoms and is bonded to the silicon atom of said fluorine-containing units by means of a carbon or oxygen atom, a is 1 or 2, b is 0, 1 or 2 and the sum of a and b is 3 or less with the provision that when R and R'' represent fluorine-containing units bonded to silicon via an oxygen atom the organosiloxane copolymer optionally contains repeating units of the formula $GSiO_{3/2}$ where G represents the residue obtained by removal of the hydrogen atom from a hydroxyl group of a linear organic polymer containing an average of at least one terminal hydroxyl group per molecule and selected from the group consisting of polyethers, polyoxyalkylene glycols, homopolymers of ethylenically unsaturated alcohols and copolymers of ethylenically unsaturated alcohols with ethylenically unsaturated hydrocarbons; the molar ratio of all units other than hydroxyl and $SiO_{4/2}$ units to $SiO_{4/2}$ units is from 0.7:1 to 1.1:1, inclusive, and the concentration of said fluorine-containing units and any $GSiO_{3/2}$ units is sufficient to

(a) impart a surface tension of less than 2.2×10^{-4} newtons per centimeter at 25° C. to a 10 percent by weight solution of (5) in a hydroxyl endblocked polydimethylsiloxane exhibiting a viscosity of 0.08 Pa.s at 25° C., and

(b) require the addition of from 0 to 100 percent by weight of xylene to said 10 percent by weight solution to achieve optical clarity and

(6) optionally, an amount of liquified blowing agent sufficient to form a foam following the release of a mixture containing said liquified blowing agent into an area under atmospheric pressure, the mixture containing this liquified blowing agent being confined under superatmospheric pressure, and

(7) optionally, an alcohol having from 1 to 12 carbon atoms, and

(8) optionally, flame retardant additives consisting essentially of non-flammable fibers and sulfur-free carbon black,

there being sufficient organohydrogen present to provide a molar ratio of silicon-bonded hydrogen atoms to the sum of vinyl radicals, silicone- bonded hydroxyl radicals, and carbon bonded hydroxyl radicals of 0.5:1 to 40:1 the mixture having a viscosity of less than 100 Pa's at 25° C.

4,608,397

FILLER-CONTAINING POLYURETHANE (UREA) COMPOSITIONS PREPARED FROM PREPOLYMERS REACTED WITH WATER IN THE PRESENCE OF LIGNITE OR PEAT

Artur Reischl, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 16, 1984, Ser. No. 672,440

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402698

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—101 **31 Claims**

1. A process for the production of polyurethane(urea) compositions comprising reacting:

(A) at least one di- and/or polyfunctional isocyanate-terminated prepolymer having an isocyanate group content of from 2 to 12% by weight,

(B) from 0 to 50% by weight, based on the weight of (A) of an organic di- and/or polyisocyanate, with the mixture of (A) and (B) having an isocyanate group content of 30% by weight or less,

(C) water, with the quantity of water being in excess of that required to react with all the isocyanate groups of (A) and (B),

(D) from 0 to 50 equivalent percent, based on the total isocyanate equivalents in (A) and (B), of an organic di- and/or polyamine,

(E) from 0.1 to 95 percent by weight of lignite, the amount of component (E) being based of the total moisture-free weight of components (A), (B), (D) and (E), said polyurethane(urea) composition having a water absorbability of from 33 to 97% by weight.

4,608,398

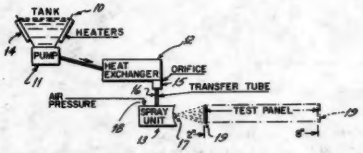
FOAMABLE THERMOSETTING COMPOSITIONS AND METHODS OF COATING THEREWITH

Walter H. Cobbs, Jr., Amherst, Ohio; Robert G. Shong, Houston, Tex., and William R. Rehman, Vermilion, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 327,025, Dec. 3, 1981, abandoned, which is a division of Ser. No. 161,135, Jun. 19, 1980, abandoned, which is a division of Ser. No. 842,265, Oct. 14, 1977, Pat. No. 4,247,581. This application Dec. 2, 1983, Ser. No. 557,639

Int. Cl.⁴ C08J *9/00*

U.S. Cl. 521—113 **6 Claims**



1. A foamable thermosetting polyurethane resin composition comprising

a curable thermosetting polyurethane resin having a free hydroxyl group or carboxyl group,

a curing agent consisting of C_1–C_4 alkoxylated amine for reaction with said hydroxyl or carboxyl group, and

a liquid blowing agent consisting of a C_1–C_4 alkanol as the sole blowing agent which is also a by-product of the thermosetting reaction of said resin with said curing agent.

4,608,399

STABILIZER-CONTAINING REACTIVE COMPONENTS FOR PU-FOAMS, NEW STABILIZERS AND A PROCESS FOR PRODUCING THESE STABILIZERS

Hans-Josef Buysch, Krefeld; Hans-Walter Illger, Roesrath, and Karl H. Dörner, Pulheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

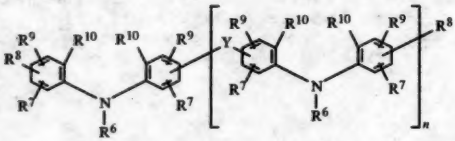
Division of Ser. No. 651,397, Sep. 17, 1984, Pat. No. 4,565,834, which is a continuation of Ser. No. 547,185, Oct. 31, 1983, abandoned, which is a division of Ser. No. 395,552, Jul. 6, 1982, Pat. No. 4,430,452. This application Oct. 18, 1985, Ser. No. 789,262

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127750

Int. Cl.[4] C08J 9/00

U.S. Cl. 521—129 3 Claims

1. Stabilizer-containing reactive components for the production of polyurethane foams with little or no tendency towards core discoloration based on polyisocyanates, polyols and, optionally, water, blowing agents, catalysts, other stabilizers and standard additives, characterized in that they contain as stabilizers monomeric and/or oligomeric derivatives of the diphenylamine series, including the phenothiazine series, in stabilizing quantities of from 0.02 to 5% by weight of compounds corresponding to the following general formula:



wherein

R^6 represents H or a C_1–C_{18}-alkyl; a C_5–C_{12} cycloalkyl or -cycloalkenyl; a C_7–C_{18}-aralkyl which may optionally be substituted by OH—, SH—, ether, thioether, carbonic ester, carbonamide and carboxyl groups or which may be interrupted by such groups other than OH, SH and COOH-groups and olefinic double bonds, a radical

or a radical of the formula

where

R^2, R^3 and R^4 are the same or different and represent a C_1–C_{12}-alkyl; a C_5–C_{12}-cycloalkyl or -cycloalkenyl; a C_7–C_{12}-aralkyl;

in addition to which R^2 represents optionally substituted aryl and, together with R^4 and the central C-atom, may form a 5- to 12-member aliphatic ring;

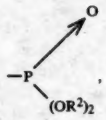
Z represents O, S, NH, NR^5 where $R^5 = R^2$,

or a radical of the formula CO—A—R^2, wherein A is a single bond,

S, O, NH or NR^2; both here and in the following,

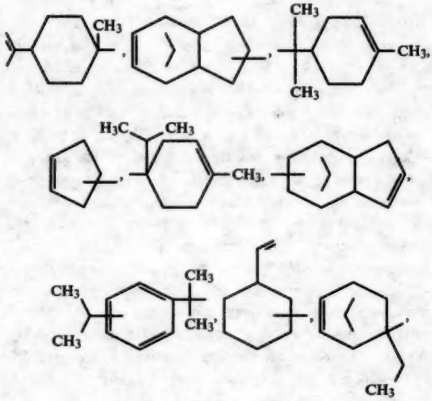
R^2 does not form a ring with R^4; or

Z together with R^3 also represents the radical



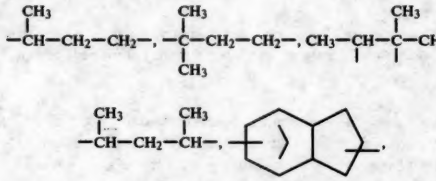
R^7, R^9 and R^{10} may be the same or different and represent H, CH_3 or C_2H_5,

R^8 represents H, benzyl, styryl, α-methyl-styryl, tert.-butyl, tert.-amyl, isononyl, cyclohexyl, methyl cyclohexyl,



Y represents

where R^7 is as defined above and R^{11} represents a C_1–C_7-alkyl; a cyclohexyl, a cyclohexenyl; an aryl; or



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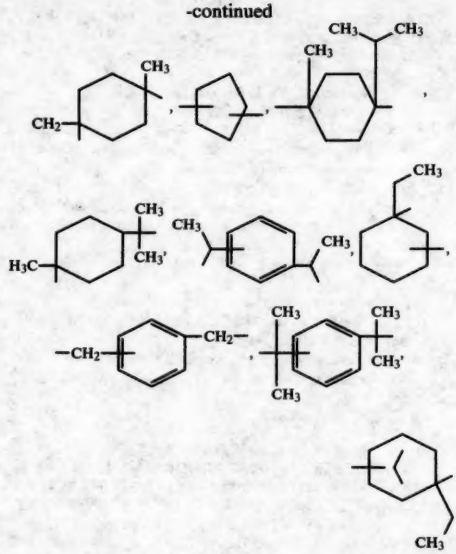


and, up to 60 mole percent may also be —S—, —CH_2—, —CH_2—S—CH_2— or —CH_2—O—CH_2—; and n is an integer of from 1 to 29.

4,608,400

NOVEL (METH)ACRYLATE AND RESIN COMPOSITION COMPRISING THE SAME

Minoru Yokoshima, Yamaguchi; Tetsuo Ohkubo, Ube, and Masayuki Kiyomoto, Yamaguchi, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

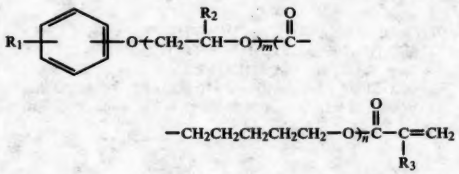
Filed Jul. 8, 1985, Ser. No. 752,586

Claims priority, application Japan, Jul. 23, 1984, 59-151179

Int. Cl.[4] C08F *283/04, 12/24;* **C07C** *69/66*

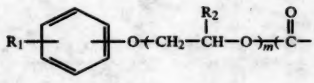
U.S. Cl. 522—96 **15 Claims**

1. A (meth)acrylate represented by the general formula:



wherein R_1 stands for a hydrogen atom or an alkyl group having 1 to 12 carbon atoms; R_2 and R_3 each stand for a hydrogen atom or a methyl group; the mean value of m is 1 to 10 and the mean value of n is 1 to 10.

6. A resin composition comprising (A) a compound represented by the general formula:



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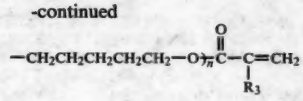


wherein R_1 stands for a hydrogen atom or an alkyl group having 1 to 12 carbon atoms; R_2 and R_3 each stand for a hydrogen atom or a methyl group; the mean value of m is 1 to 10 and the mean value of n is 1 to 10,

(B) a polyurethane acrylate and (C) a photopolymerization initiator.

4,608,401

METHOD OF ENCAPSULATING FINELY DIVIDED SOLID PARTICLES

Robert W. Martin, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 583,818, Feb. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 516,859, Jul. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 414,392, Sep. 2, 1982, abandoned. This application Jul. 26, 1985, Ser. No. 758,850

Int. Cl.[4] C08K *3/10, 9/10, 9/04, 2/20*

U.S. Cl. 523—205 **9 Claims**

1. The method of encapsulating in suspension in an aqueous medium discrete finely divided water-insoluble solid particles with a water-insoluble polymeric envelope which comprises the steps of:

suspending in an aqueous medium, under agitation milder than high shear mixing, (a) finely divided solid particles substantially free of ionic charges of such level that would cause flocculation upon subsequent initiation of addition polymerization and (b) a water-insoluble monomer capable of addition polymerization to form a water-insoluble polymer free of ionically charged groups, in the presence of (c) a water-soluble, non-ionic, surface-active stabilizing agent having a HLB number of at least about 13, the stabilizing agent being present in an amount sufficient to produce a generally stable suspension of the ultimately formed polymer encapsulated particles;

introducing an addition polymerization initiating agent which is not an anionic or cationic surface active or dispersing agent, and does not decompose to form same, in an amount sufficient to initiate addition polymerization of the monomer present; and, during or after the introduction of said initiating agent,

subjecting the resulting suspension to suspension polymerization conditions, while said suspension is maintained substantially free of anionic or cationic surface active or dispersing agents.

4,608,402

SURFACE TREATMENT OF PITCH-BASED CARBON FIBERS

Hugh E. Redick, Simpsonville, S.C., and Russell D. Barnes, Belews Creek, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1985, Ser. No. 764,060

Int. Cl.[4] C08K *3/04*

U.S. Cl. 523—215 **6 Claims**

1. A process for improving the adhesion of a pitch-based carbon fiber for use in organic resin matrix composites comprising exposing the fiber at room temperature to a gaseous atmosphere containing from about 100 to 1000 parts per million of ozone for a period of at least 30 seconds.

5. A composite comprising an organic resin matrix reinforced with the fiber of claim 1.

4,608,403

METHOD FOR MAKING SYNTACTIC FOAM WITH IMPROVED PROCESSING CHARACTERISTICS USING A SILANE COUPLING AGENT IN COMBINATION WITH AN ALKYLPHENOL ALKOXYLATE

Kathy B. Sellstrom, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 13, 1985, Ser. No. 808,718
Int. Cl.[4] C08J 9/32
U.S. Cl. 523—218 5 Claims

1. In a method for making syntactic foams with improved processibility and lower cure times, including combining a vicinal polyepoxide having an epoxy equivalency of greater than 1.8, a hollow granular filler and a curing amount of a curing agent for the polyepoxide, the improvement which comprises:

combining with the above ingredients an effective amount of an alkylphenol alkoxylate and an effective amount of an aminosilane coupling agent.

4,608,404

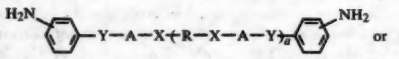
EPOXY COMPOSITIONS CONTAINING OLIGOMERIC DIAMINE HARDENERS AND HIGH STRENGTH COMPOSITES THEREFROM

Hugh C. Gardner, Somerville; George L. Brode, Bridgewater, and Robert J. Cotter, Bernardsville, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 509,453, Jun. 30, 1983, abandoned.
This application May 2, 1985, Ser. No. 728,469
Int. Cl.[4] C08G 59/50
U.S. Cl. 523—400 40 Claims

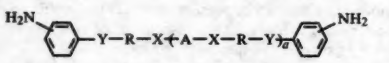
1. A composition comprising:

(a) a diamine hardener represented by the following general formulas:



(i)

or



(ii)

or mixtures thereof, wherein X is O, S, SO or SO_2, Y is O or S, A is the residuum of a dihalobenzenoid compound, R is the residuum of a dihydric phenol and a is 0.05 to 20, and

(b) an epoxy resin containing two or more 1,2-epoxide groups per molecule.

4,608,405

AQUEOUS BASED EPOXY RESIN CURING AGENTS

William J. DeGooyer, Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed May 6, 1985, Ser. No. 730,906
Int. Cl.[4] C08G 63/00
U.S. Cl. 523—404 22 Claims

1. An epoxy resin curing agent comprising a volatile acid salt of the reaction product of (a) an epoxy resin which comprises an essentially linear diepoxide prepared by reacting a diglycidyl ether of a dihydric phenol, a diglycidyl ether of an aliphatic dihydroxy polyether and a dihydric phenol, with (b) a primary containing polyamine, followed by reaction with (c) a monoepoxide, or monocarboxylic acid, wherein substantially all of the epoxy groups in said epoxy resin are reacted with the polyamine and wherein substantially at least all of the unreacted primary amine groups in the polyamine/epoxide reaction product are further reacted with the monoepoxide or the monocarboxylic acid.

4,608,406

STABLE AQUEOUS EPOXY RESIN DISPERSIONS

Paul R. Williams, Jr.; Russell V. Burt, and Ronald Golden, all of Louisville, Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 18, 1985, Ser. No. 724,439
Int. Cl.[4] B05D 3/00; C08L 63/02
U.S. Cl. 523—424 11 Claims

1. A stable epoxy resin dispersion composition comprising:

(1) an aqueous medium; and

(2) between about 50 to about 70 weight percent of self-emulsifying epoxy resin having a molecular weight of about 1000 to 20,000 which resin is the addition reaction product of

(a) 40–90 parts by weight of a diglycidyl ether of a dihydric phenol,

(b) 5–35 parts by weight of a dihydric phenol,

(c) 2–15 parts by weight of a diglycidyl ether of a polyoxyalkylene glycol, and

(d) 2–15 parts by weight of an alkyl phenol-formaldehyde novolac resin wherein the alkyl group contains 4 to 12 carbon atoms.

4,608,407

PROCESS FOR THE PRODUCTION OF COMPRESSION-MOLDED MATERIALS CONTAINING POLYISOCYANATE BINDERS USING LATENT, HEAT ACTIVATABLE CATALYSTS

Dimitrios Kerimis, Cologne; Hanns P. Müller, Odenthal, and Manfred Kapps, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,341
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1983, 3328662
Int. Cl.[4] B29J 5/00; C08G 18/18; C08L 97/02
U.S. Cl. 524—14 12 Claims

1. In a process for the production of compression-molded materials by the compression molding of lignocellulose-containing materials mixed and/or impregnated with polyisocyanates as binder in the presence of catalysts, the improvemet wherein the catalysts used are latet, heat-activatable catalysts based on ammonium salts of the type which are obtained by reacting

(i) monofunctional or polyfunctional, tertiary amines with

(ii) alkyl esters of acids of phosphorus having alkylating properties, such that virtually all of the amine nitrogen atoms of component (i) have been alkylated by said ester.

4,608,408

PHENOL-HCHO-RESORCINOL RESINS FOR USE IN FORMING FAST CURING WOOD LAMINATING ADHESIVES

Richard T. Hood, Murrysville, and Raymond L. Bender, Bakerstown, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 24, 1985, Ser. No. 726,511
Int. Cl.[4] C08G 8/24
U.S. Cl. 524—15 8 Claims

1. A method for making a soluble, fusible phenol-resorcinol-formaldehyde resin solution, which resin comprises about 50 to 95 moles phenol with about 5 to 50 moles resorcinol per 100 moles of total phenol and resorcinol and about 0.55 to 0.75 moles of formaldehyde for each mole total of phenol and resorcinol, said resin being prepared by the steps comprising:

(a) reacting said phenol and said formaldehyde at an initial pH of from about 8.5 to 9.2 in the presence of a sodium sulfite catalyst in an amount of about 0.04 to 0.09 mole per mole of formaldehyde;

(b) then heating the reaction mixture to reflux until the mixture has a viscosity of about u to v on the Gardner bubble test;

(c) then introducing resorcinol to the reaction mixture and continuing refluxing until the reaction mixture has a constant viscosity of about 30 to 100 Gardner seconds;

(d) then diluting the reaction mixture with a water miscible solvent to obtain a resin solution having a solids content of about 40 to 60 percent by weight and a viscosity of about 2.0 to 3.5 poise and adding an alkali metal carbonate material in the weight amount of about 4 to 8 percent of the weight of the reaction mixture present at the completion of step (c); and

(e) then, if the pH of resin solution formed in step (d) is less than about 7.5, adjusting the pH of said resin solution to at least about 7.5.

4,608,409

POLYACRYLATED OLIGOMERS IN ULTRAVIOLET CURABLE OPTICAL FIBER COATINGS

Clive J. Coady, Hanover Park; John J. Krajewski, Wheeling, and Timothy E. Bishop, Algonquin, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed May 8, 1985, Ser. No. 731,888

Int. Cl.[4] C08L *75/04*

U.S. Cl. 524—199 14 Claims

1. An ultraviolet curing liquid coating composition which, when cured with ultraviolet light in the presence of an appropriate photoinitiator, provides a buffer coating for optical glass fiber consisting essentially of a linear polyacrylate-terminated polyurethane or polyurea oligomer in admixture with a liquid acrylate-functional material which does not increase the low temperature hardness and which provides the liquidity needed for coating application, said polyacrylate-terminated polyurethane or polyurea oligomer having a room temperature tensile modulus of at least 100 psi., and a tensile modulus at −60° C. which is less than 175,000 psi., when capped with 2-hydroxyethyl acrylate and cured with ultraviolet light, said oligomer being capped with a monohydric polyacrylate.

4,608,410

THERMOSET ACRYLIC LATICES FOR WOOD COATING

David A. Borovicka, Sr., Parma, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Sep. 7, 1984, Ser. No. 648,077

The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.

Int. Cl.[4] C08L *61/24, 33/26;* C09D *3/52*

U.S. Cl. 524—512 3 Claims

1. In a process for producing a thermosetting low temperature curable composition containing a polymeric composition dispersed in water, the process steps comprising:

providing an aqueous mixture containing by weight between 5% and 60% of a glycoluril cross-linking agent cold blended with between 40% and 95% of an emulsion polymer; wherein said percentages total 100 percent and are based on the combined weights of cross-linking agent and latex polymer exclusive of water; wherein said emulsion polymer comprises polymerized ethylenically unsaturated monomers selected from between 0.5% and 10% alpha,-beta-ethylenically unsaturated carboxylic acid monomer, between 1% and 20% acrylamide or methacrylamide monomer, between 20% and 60% vinyl unsaturated hydrocarbon monomer, and the balance other ethylenically unsaturated monomer, wherein said emulsion polymer contains only reactive carboxyl or reactive amide groups for cross-linking with said glycoluril cross-linking agent.

4,608,411

GRAFTED ETHYLENE POLYMERS USABLE MORE ESPECIALLY AS ADDITIVES FOR INHIBITING THE DEPOSITION OF PARAFFINS IN CRUDE OILS AND COMPOSITIONS CONTAINING THE OILS AND SAID ADDITIVES

Gilles Meunier, Lescar; René Brouard, L'isle Adam; Bernard Damin, Oullins, and Denis Lopez, Toulouse, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Oct. 23, 1985, Ser. No. 790,358

Claims priority, application France, Oct. 25, 1985, 84 16349

Int. Cl.[4] C08L *51/00;* C08F *265/04, 263/04*

U.S. Cl. 524—533 16 Claims

1. A grafted copolymer additive for inhibiting the deposition of paraffins and improving the flow properties of crude oils which comprises a copolymer of ethylene with at least one ethylenically unsaturated monomer selected from the group consisting of:

vinyl esters of C_2 to C_{18} monocarboxylic acids,

C_1 to C_{12} alkyl esters of C_3 to C_{12} unsaturated monocarboxylic acids,

α,β-unsaturated dicarboxylic acids, C_1 to C_{12} alkyl diesters of α,β-unsaturated dicarboxylic acids and anhydrides of α,β-unsaturated dicarboxylic acids having grafted thereto a homopolymer or copolymer of an ester of an α,β-unsaturated monocarboxylic acid with at least one alkanol having a chain length of at least C_{12} and wherein at least 20% of said alkanol has a chain length of at least C_{22}, said ethylene copolymer being from about 50 to 95% by weight of the grafted copolymer.

4,608,412

SILICONE WATER-BASED ELASTOMERIC CAULKING MATERIAL

Alan L. Freiberg, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 24, 1985, Ser. No. 737,602

Int. Cl.[4] C08L *19/02, 83/14;* C08K *3/22*

U.S. Cl. 524—724 12 Claims

1. A silicone caulking material consisting essentially of the product obtained by mixing

(A) 100 parts by weight of an anionically stabilized, hydroxyl endblocked polydiorganosiloxane having a weight average molecular weight of above 50,000, the organic radicals being monovalent hydrocarbon radicals containing less than 7 carbon atoms or 2-(perfluoroalkyl)ethyl radicals having less than 7 carbon atoms per radical, present as an emulsion of dispersed particles in water, the emulsion having a pH of greater than 9 and a solids content of greater than 50 percent by weight,

(B) from 0.075 to 0.75 part by weight of dialkyltindi- carboxylate,

(C) from 0.2 to 5 parts by weight of alkyl orthosilicate of the formula $Si(OR')_4$ where R' is a lower alkyl radical of from 1 to 4 carbon atoms inclusive,

(D) from 50 to 200 parts by weight of inert, nonsiliceous filler, and

(E) from 0 to 10 parts by weight of 2-amino-2-methyl-1-propanol

to produce a material having a paste viscosity which can be used immediately upon mixing as a caulking material which forms a silicone elastomer upon removal of the water.

4,608,413

AQUEOUS POLYURETHANE STOVING LACQUERS AND THE USE THEREOF FOR THE PRODUCTION OF LACQUER FILMS AND COATINGS

Klaus Nachtkamp, Cologne; Jürgen Schwindt, Leverkusen; Karl-Ludwig Nobel, Cologne, and Hans-Georg Stahl, Oldenburg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,679

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345448

Int. Cl.[4] C08L 75/08, 75/06; C08K 3/20; C09D 3/72

U.S. Cl. 524—591 6 Claims

1. An aqueous stoving lacquer containing pigments and/or fillers wherein the binder comprises

(a) a polyether and/or polyester urethane prepolymer having blocked isocyanate groups, an average functionality (based on the blocked NCO groups) of from about 1.8 to 5, an average molecular weight of about 500 to 10,000, a content of blocked isocyanate groups (calculated as NCO) of about 2 to 15% by weight, a content of urethane groups (calculated as —NH—CO—O) of about 5 to 30% by weight and a content of chemically incorporated, at least partially neutralized carboxyl groups of about 10 to 180 milliequivalents per 100% grams of solids, and

(b) a polyether and/or polyester uretnane prepolymer having free alcoholic hydroxyl groups, an average hydroxyl functionality of about 1.8 to 5, an average molecular weight of about 500 to 10,000, a content of alcoholic hydroxyl groups of about 0.5 to 10% by weight, a content of urethane groups (calculated as —NH—CO—O—) of about 5 to 30% by weight and a content of chemically incorporated, at least partially neutralized carboxyl groups of about 10 to 180 milliequivalents per 100 grams of solids, wherein said binder is further characterized by

(i) components (a) and (b) being present in quantities corresponding to an equivalent ratio of blocked isocyanate groups to hydroxyl groups of about 0.6:1 to 2:1,

(ii) the total quantity of neutralized carboxyl groups being sufficient for the binder to be dispersible or soluble in water,

(iii) the polyether and polyester segments each being present in a total quantity of at least 10% by weight, based on the weight of said binder and

(iv) said polyether segments containing at most 10% by weight of ethylene oxide units, $CH_2—CH_2—O$.

4,608,414

THERMOPLASTIC RESIN COMPOSITION CONTAINING AN IMIDE POLYMER AND GRAFT COPOLYMER

Tomoyuki Kitsunai, Machida; Tetsuji Miura, Tokyo, and Norio Yagi, Atsugi, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 632,114, Jul. 18, 1984, abandoned. This application Nov. 22, 1985, Ser. No. 800,099

Claims priority, application Japan, Jul. 19, 1983, 58-131533

Int. Cl.[4] C08L 55/02, 25/08

U.S. Cl. 525—71 10 Claims

1. A thermoplastic resin composition comprising:

(A) from 10 to 90 parts by weight of an imide-modified polymer having an imido group and obtained by reacting ammonia and/or a primary amine to a copolymer prepared by the polymerization of a monomer mixture comprising from 30 to 70% by weight of an aromatic vinyl monomer and from 30 to 50% by weight of an unsaturated dicarboxylic acid anhydride;

(B) from 10 to 90 parts by weight of a graft copolymer prepared by copolymerizing from 30 to 75% by weight of a mixture comprising from 40 to 80% by weight of a rubber-like polymer having a weight average particle size of from 0.3 to 0.6 μm and from 20 to 60% by weight of a rubber-like polymer having a weight average particle size of from 0.1 to 0.2 μm, with from 25 to 70% by weight of a monomer mixture comprising from 55 to 75% by weight of an aromatic vinyl monomer and from 25 to 45% by weight of a vinyl cyanide monomer, said rubber-like polymer being a butadiene polymer or a butadiene copolymer containing at least 50% by weight of butadiene; and

(C) from 0 to 80 parts by weight of a copolymer prepared by polymerizing from 40 to 80% by weight of an aromatic vinyl monomer, from 0 to 40% by weight of a vinyl cyanide monomer and from 0 to 40% by weight of a vinyl monomer copolymerizable therewith.

4,608,415

COMPOSITION OF MODIFIED CHLORINATED RESINS

Jun Nakajima, Kyoto, and Shiceki Morinaga, Osaka, both of Japan, assignors to Asahipen Corporation, Japan

Continuation of Ser. No. 254,038, Apr. 14, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 474,959

Claims priority, application Japan, Apr. 15, 1980, 55-50142; Jul. 26, 1980, 55-102817

Int. Cl.[4] C08L 63/10, 91/00

U.S. Cl. 525—111.5 2 Claims

1. A coating material which contains a modified chlorinated resin vehicle, comprising a chlorinated resin with chlorine content of less than 40 percent by weight selected from the group consisting of chlorinated polyethylene, chlorinated polypropylene and copolymers of chlorinated ethylene and chlorinated propylene reacted with a resin modified by fatty acid with a rate of conjugation of more than 30 percent in the presence of a catalyst while heating from 100° C.-200° C. under a stream of inert gas.

4,608,416

HEAT-CURABLE SURFACE-COATING AGENTS, AND THEIR USE

Eberhard Schupp, Schwetzingen; Werner Loch, Erpolzheim; Rolf Osterloh, Gruenstadt, and Klaas Ahlers, Muenster, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 547,094, Oct. 31, 1983, Pat. No. 4,576,979. This application Mar. 13, 1985, Ser. No. 711,201

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311516

Int. Cl.[4] C08L 47/00, 75/00

U.S. Cl. 525—130 3 Claims

1. A heat-curable surface coating agent which contains, as a binder, a mixture of (A) one or more polyadducts, polycondensates or other polymers having an average molecular weight M_n of from 500 to 10,000 and, per molecule, on average two or more OH or primary or secondary amino groups, or two or more OH and primary or secondary amino groups, or two or more OH and primary and secondary amino groups, with the proviso that component (A) is at least one compound selected from the group consisting of polyester resins including alkyd resins containing one or more monocarboxylic acids or glycidyl esters of branched carboxylic acids, a polydiene resin and a polydiene oil, and (B) a reaction product of (a) one or more polyisocyanates, (b) one or more secondary monoamines and (c) one or more polyalcohols having two or more hydroxyl groups, with the further proviso that component (A) is not a reaction product of epoxy resins with alcohols, mercaptans or amines.

4,608,417

COMPOSITIONS COMPRISING OLEFIN POLYMER BLENDS

Harold F. Giles, Jr., Cheshire, Mass., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 630,870, Jul. 13, 1984, Pat. No. 4,567,105. This application Jul. 25, 1985, Ser. No. 758,746
Int. Cl.[4] C08L 69/00
U.S. Cl. 525—148 7 Claims

3. A composition comprising a blend of

(a) a major amount of an aromatic polycarbonate and a polyolefin other than poly-(4-methylpentene-1); and

(b) a minor amount of an olefin acrylate polymer and poly-(4-methylpentene-1).

4,608,418

HOT MELT COMPOSITION AND PROCESS FOR FORMING THE SAME

Richard W. Czerwinski, and Larry D. Osterberger, both of Nashville, Tenn., assignors to Gensco Inc., Tenn.

Filed Feb. 22, 1985, Ser. No. 704,229
Int. Cl.[4] C08K 5/09; C08G 5/12, 18/42
U.S. Cl. 524—296 38 Claims

1. A thermoplastic hot melt composition comprising a polyurethane having at least one plasticizer reacted therein formed by heating a reaction mixture comprising at least one isocyanate having a functionality less than about 2.2, at least one long chain polyol, at least one chain extender and the at least one plasticizer at a temperature of at least about 330° F., wherein said components are present in amounts sufficient to meet the following formula:

$$(A+B+C)/D=0.5 \text{ to about } 7.0$$

wherein:

A represents the equivalent weight of the long chain polyol x the moles thereof used;

B represents the equivalent weight of the chain extender x the moles thereof used;

C represents the equivalent weight of the isocyanate x the moles thereof used; and

D represents the grams of plasticizer.

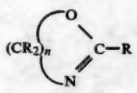
4,608,419

CYCLIC IMINOETHER MODIFIED COPOLYMERS AS IMPROVED ADHESIVES

Linneaus C. Dorman, and Victor E. Meyer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 551,789, Nov. 14, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,820
Int. Cl.[4] C08F 8/00
U.S. Cl. 525—329.9 13 Claims

1. A copolymer adhesive composition, comprising (i) a polymerizable olefin and (ii) an α,β-ethylenically unsaturated carboxylic acid, wherein at least a portion of the carboxyl groups present on said (ii) are converted to an ester/amide derivative by reacting said carboxyl groups with a cyclic iminoether compound characterized by the structural formula:



wherein the R groups are independently an alkyl, arylalkyl, aryl or H and n is 2 or 3, whereby said copolymer adhesive composition is not crosslinked.

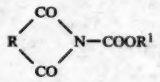
4,608,420

PROCESS FOR THE PREPARATION OF ACYLURETHANES, AND THE USE THEREOF

Gerhard Brindöpke, Frankfurt am Main, and Gerhard Johannes, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 6, 1985, Ser. No. 741,876
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421293
Int. Cl.[4] C08F 8/30
U.S. Cl. 525—375 14 Claims

1. A process for the preparation of an acylurethane by reacting a urethane with compounds containing hydroxyl groups, which comprises reacting a hydroxy compound (A) with a urethane (B) in the form of an imide of the formula



(I)

to give an acylurethane containing at least one grouping of the formula —CO—R—CO—NH—COOR[1] (II), in which formulae R denotes the hydrocarbon radical of an optionally α,β-ethylenically unsaturated, aliphatic, cycloaliphatic or aromatic dicarboxylic acid or endomethylene derivatives thereof, in each case having 2 to 10 carbon atoms, and R[1] denotes alkyl, alkoxy or alkoxyalkyl having in each case 1 to 16 carbon atoms in the alkyl group, cycloalkyl having 3 to 10 carbon atoms or benzyl.

4,608,421

SILICONE-POLYESTER POWDER COATING COMPOSITIONS

Ju-Chui Lin, Strongsville, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Jun. 17, 1985, Ser. No. 745,443
Int. Cl.[4] C08G 65/32
U.S. Cl. 525—403 22 Claims

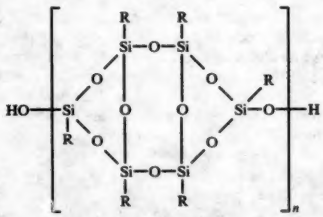
1. A siloxane-polyester, siloxane ether or siloxane-ether-polyester copolymer resin having an acid number of from about 0 to 20, a hydroxyl number from about 20 to about 180 and comprising the reaction product, totaling 100 percent of:

(a) 0 to 33 percent polyester precursor rigid organic diacid;

(d) 20 to 30 percent multifunctional glycol or polyol having at least two hydroxy functional groups;

(c) 0 to 8 percent trimellitic acid or anhydride; and

(d) 30 to 90 percent hydroxy-functional cyclic siloxane having at least two silanol groups per mole adapted to react with said multifunctional glycol and acid to provide a crystalline siloxane-polyester or siloxane-ether powder coating resin having a tack temperature of at least 50° C.; said siloxane having the structure:



where n is an integer from 1 to 10 and R independently represents lower alkyl and phenyl groups.

4,608,422

PREPARATION OF HYDROXYL-CONTAINING POLYMERS

Herbert Mueller, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,026

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410069

Int. Cl.[4] C08F *8/04*

U.S. Cl. 525—410 4 Claims

1. In a process for the preparation of a hydroxyl-containing polymer by catalytic hydrogenation of an acyloxy-containing polymer, the improvement which comprises:

hydrogenating at from 180° to 280° C. and under a hydrogen pressure of from 200 to 300 bar a mixture containing

(a) an acyloxy-containing polytetrahydrofuran having a molecular weight of from 300 to 5,000,

(b) a strong base selected from the group consisting of the oxides, hydroxides and alcoholates of alkali and alkaline earth metals, and

(c) an alcohol having 1 to 5 carbon atoms, the concentration of the strong base in said mixture being from 0.001 to 1% by weight and the concentration of the alcohols in said mixture being from 5 to 70% by weight.

4,608,423

LINEAR ADDITION POLYESTER COPOLYMERS

Kirk J. Abbey, Seville, Ohio, assignor to SCM Corporation, New York, N.Y.

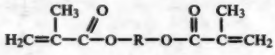
Continuation-in-part of Ser. No. 749,310, Jun. 20, 1985, abandoned. This application Jan. 27, 1986, Ser. No. 822,334

Int. Cl.[4] C08F *4/06*

U.S. Cl. 526—172 13 Claims

1. A process for preparing non-crosslinked polyester polymer having 2,2-dimethyl-4-methylene glutarate structural units in the polymer chain and a weight average molecular weight above about 2,000 which comprises

(a) providing a dimethacrylate ester of the formula:



wherein R is selected from the group consisting of an aliphatic chain containing between two and thirty carbon atoms; an aliphatic polyether residue containing between two and thirty carbon atoms; a diepoxide residue; and a low molecular weight hydroxyl-terminated polyester residue; wherein said dimethacrylate ester is the reaction product of about one mole of a diol or diepoxide with about 2 moles of methacrylic acid;

(b) polymerizing said dimethacrylate ester in the presence of at least 0.1% non-peroxide free radical initiator and in the presence of at least 0.01% Cobalt(II) catalyst complex for chain transfer to monomer.

4,608,424

LATEX COMPOSITIONS COMPRISING LOADABLE POLYMERIC PARTICLES

James W. Brown, Spencerport; Tsang J. Chen, Rochester, both of N.Y., and Michael A. Schen, Amherst, Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 399,404, Jul. 19, 1982, Pat. No. 4,497,929. This application Oct. 12, 1984, Ser. No. 660,157

Int. Cl.[4] C08F *30/04*

U.S. Cl. 526—240 1 Claim

1. A polymeric composition selected from the group consisting of:

poly(n-butyl acrylate-co-tetrahydrofurfuryl methacrylate-co-sodium 2-acrylamido-2-methylpropanesulfonate);

poly(methyl acrylate-co-tetrahydrofurfuryl methacrylate-co-sodium 2-acrylamido-2-methylpropanesulfonate) and

poly(tetrahydrofurfuryl methacrylate-co-sodium 2-acrylamido-2-methylpropanesulfonate).

4,608,425

HIGH CHARGE DENSITY POLYMERIC COMPLEXES - VISCOSIFIERS FOR ACID, BASE AND SALT (AQUEOUS) SOLUTIONS

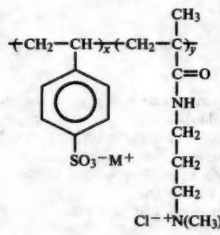
Dennis G. Peiffer, East Brunswick, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 688,237, Jan. 2, 1985, abandoned. This application Jun. 21, 1985, Ser. No. 747,427

Int. Cl.[4] C08F *20/60*

U.S. Cl. 526—241 10 Claims

1. A water soluble copolymer consisting of formula:



wherein x is about 1 to about 99 mole %, y is about 1 to about 99 mole %, and M is selected from the group consisting of amines and a metallic cation being selected from the group consisting of lead, iron, aluminum, Groups IA, IIA, IB and IIB of the Periodic Table of Elements, said copolymer being formed by a free radical copolymerization in a reaction solution and recovering said copolymer from said reaction solution.

4,608,426

BIS-MALEIMIDE RESIN COMPOSITION

Bruce A. Stern, Fallston, Md., assignor to American Cyanamid Company, Stamford, Conn.

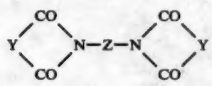
Filed Jan. 29, 1985, Ser. No. 695,989

Int. Cl.[4] C08G *69/00*

U.S. Cl. 528—170 11 Claims

1. A resin composition comprising:

(i) 40 to 95 percent by weight of a mixture of unsaturated N,N'-bis-imides of the formula:



where Y represents a divalent radical of at least 2 carbon

atoms and contains a carbon-carbon double bond and in major portion of the mixture, Z is the residue of at least one aromatic diamine and in the minor portion of the mixture Z is the residue of an aliphatic diamine;

(ii) 5 to 60 percent by weight of a heat-activatible cross-linking agent combination for said bis-imides (i), said combination comprising (1) 1 to 99 parts by weight of an arylene polyamine compound and (2) 99 to 1 parts by weight of an alkenyl phenol or an alkenylphenol ether; and

(iii) 0 to 5 percent by weight of an imidazole polymerization catalyst.

4,608,427

METHOD FOR MAKING PBO AND PBT POLYMERS

Wilfred Sweeny, and Stephanie L. Kwolek, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 20, 1985, Ser. No. 746,757
Int. Cl.[4] C08G *73/22, 75/32*
U.S. Cl. 528—179 **5 Claims**

1. A method for preparing polybenzobisthiazoles and polybenzobisoxazoles which comprises reacting in a polyphosphoric acid medium, and in substantially stoichiometric proportions, 2,5-diamino-1,4-benzenedithiol dihydrochloride or 4,6-diaminoresorcinol dihydrochloride with a diester of the group consisting of diethyl, di-n-propyl, diisopropyl or diisobutyl terephthalate, 4,4[1]-bibenzoate or 2,6-naphthoate.

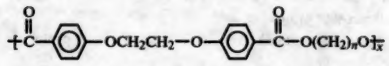
4,608,428

COPOLYMERS OF A 4,4'-(ETHYLENEDIOXY)BIS BENZOATE, AN ALKYLENE DIOL AND A (2-ALKENYL OR ALKYL) SUCCINIC ANHYDRIDE; AND SURGICAL DEVICES FORMED THEREFROM

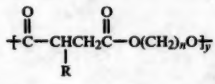
Shalaby W. Shalaby, Lebanon, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 401,494, Jul. 26, 1982, Pat. No. 4,511,706. This application Sep. 10, 1984, Ser. No. 648,446
Int. Cl.[4] C08G *63/66*
U.S. Cl. 528—192 **18 Claims**

1. A surgical device formed from a copolymer consisting essentially of a multiplicity of recurring A and B units having the following general formula:



A



B

wherein

x and y are numbers having average values such that the B units comprise from 1 to 55 weight percent of the copolymer and the A units comprise the remainder,

n is 2 to 8, and

R represents a linear or branched alkyl or alkenyl radical with a chain length of 4 to 30 carbon atoms, or a mixture of such radicals with different chain lengths.

4,608,429

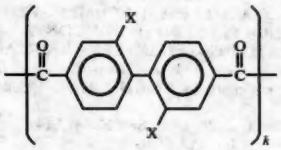
LOW-MELTING AROMATIC POLYESTERS WITH REPEATING 2,2'-SUBSTITUTED-BIPHENYLENE RADICALS

Howard G. Rogers, Weston, Mass.; Russell A. Gaudiana, Merrimack, N.H.; Richard A. Minns, and Roger F. Sinta, both of Arlington, Mass., assignors to Polaroid Corporation, Patent Dept., Cambridge, Mass.

Filed Nov. 23, 1984, Ser. No. 674,515
Int. Cl.[4] C08G *63/18*
U.S. Cl. 528—194 **22 Claims**

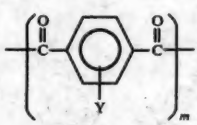
1. A melt-processable polyester comprising repeating radicals of the formulas

(I)



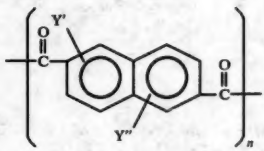
wherein X is a substituent other than hydrogen, and k represents the molar amount of the formula (I) radical in the polyester;

(II)



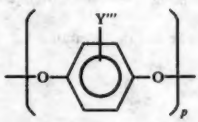
wherein Y is hydrogen or a substituent other than hydrogen, and m represents the molar amount of the formula (II) radical in the polyester;

(III)



wherein each of Y' and Y'' represents hydrogen or a substituent other than hydrogen, and n represents the molar amount of the formula (III) radical in the polyester; and

(IV)



wherein Y''' is hydrogen or a substituent other than hydrogen, and p represents the mole ratio of the formula (IV) radical in the polyester; the molar proportions of formula (I), (II), (III) and (IV) radicals conforming to the following relationships:

$$\frac{k}{k+m+n} = 0.2 \text{ to } 0.8;$$

$$\frac{m}{k+m+n} = 0 \text{ to } 0.8;$$

-continued

$$\frac{n}{k+m+n} = 0 \text{ to } 0.8;$$

$$\frac{m+n}{k+m+n} = 0.2 \text{ to } 0.8; \text{ and}$$

$$\frac{k}{k+m+n} + \frac{m+n}{k+m+n} = \frac{p}{k+m+n}.$$

4,608,430

POLYCARBONATE EXHIBITING IMPROVED HEAT RESISTANCE FROM DIPHENOL CONTAINING DISUBSTITUTED PHENYLENE RADICAL

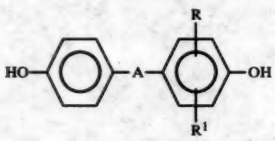
Victor Mark, Evansville, Ind., and John R. Campbell, Clifton Park, N.Y., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 28, 1984, Ser. No. 687,147
Int. Cl.[4] C08G 63/62
U.S. Cl. 528—196 7 Claims

1. Thermoplastic polycarbonate resin exhibiting improved heat resistance comprised of the reaction product of:

(i) a carbonate precursor; and

(ii) at least one dihydric phenol represented by the general formula



wherein:

R and R^1 are independently selected from alkyl radicals; and A is selected from divalent hydrocarbon radicals.

4,608,431

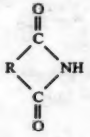
POLYIMIDE FROM UNSATURATED IMIDE, POLYAMINE AND ALDEHYDE

Dalip K. Kohli, Norwalk, Conn., assignor to American Cyanamid Co., Stamford, Conn.

Filed Jan. 29, 1985, Ser. No. 695,991
Int. Cl.[4] C08G 12/06, 12/26
U.S. Cl. 528—246 11 Claims

1. A method for making a resinous polyimide which comprises contacting

(i) an unsaturated imide of the formula



wherein r is an aliphatically unsaturated hydrocarbon radical;

(ii) from about 0.5 to about 2 moles per mole of (i) of formaldehyde or a formaldehyde precursor; and

(iii) from about 0.5 to 2 moles per mole of (i) of an organic polyamine.

4,608,432

SELF-COMPATIBILIZING POLYESTER POLYOL BLENDS BASED ON POLYALKYLENE TEREPHTHALATE

George Magnus, Arlington Heights; Melvin Loeb, Northbrook; Robert J. Wood, Round Lake Park, and Brian Kelley, Round Lake Beach, all of Ill., assignors to Stepan Company, Northfield, Ill.

Filed Sep. 23, 1985, Ser. No. 779,169
Int. Cl.[4] C08G 63/04, 63/22
U.S. Cl. 528—274 31 Claims

1. A process for preparing a low acid number selfcompatibilizing polyester polyol product blend based on polyalkylene terephthalate comprising the step of heating at a temperature ranging from about 180° to 240° C. a starting mixture which comprises on a 100 weight percent total basis:

(A) from about 15 to 80 weight percent of polyalkylene terephthalate;

(B) from about 8 to 80 weight percent of at least one low molecular weight aliphatic diol characterized by the generic formula:

$$HO—R^1—OH$$

where:

R^1 is a divalent radical selected from the group consisting of:

(a) alkylene radicals each containing from 2 through 6 carbon atoms,

(b) radicals of the formula:

$$—(R^3O)_n—R^3—$$

where:

R^3 is an alkylene radical containing from 2 through 3 carbon atoms, and n is an integer of from 1 through 3, and

(c) mixtures thereof, and

(C) from about 2 to 30 weight percent of at least one compatibilizer compound selected from the group consisting of hydrophobic compounds, nonionic surfactant compounds, and mixtures thereof, said hydrophobic compound being characterized by:

(1) having an equivalent weight of from about 130 to 900,

(2) containing from about 8 to 60 carbon atoms per molecule, and

(3) containing one radical per molecule, selected from the group consisting of carboxyl and hydroxyl, and

said nonionic surfactant compound being characterized by:

(1) containing from about 10 to 600 carbon atoms per molecule,

(2) containing at least one and not more than four hydroxyl radicals per molecule, and

(3) containing from about 4 to 270 radicals per molecule of the formula

$$—(R^3O)—$$

where:

R^3 is as above defined,

said heating being continued until a liquid reaction product is produced which is characterized by having:

(A) an hydroxyl number ranging from about 200 to 500,

(B) an acid number ranging from about 0.1 to 7,

(C) a saponification value ranging from about 130 to 400, and

(D) a viscosity ranging from about 200 to 50,000 centipoises at 25° C. measured using a Brookfield viscometer.

4,608,433

INERT MONOVALENT HYDROCARBON TERMINATED POLYSULFIDE POLYMERS

Victor E. Meyer, and Thomas E. Dergazarian, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

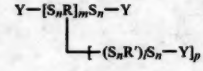
Continuation-in-part of Ser. No. 552,235, Nov. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 426,559, Sep. 29, 1982, Pat. No. 4,438,259, which is a continuation-in-part of Ser. No. 339,820, Jan. 18, 1982, abandoned. This application Jul. 24, 1985, Ser. No. 758,235

The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

Int. Cl.[4] C08G 75/14

U.S. Cl. 528—388 14 Claims

1. A polysulfide polymer having a molecular weight from about 3,000 to about 100,000, as represented by the general structure



wherein R and R′ at each occurrence are independently polyvalent organic polyradicals with each valence residing on a carbon atom; each Y is a terminal substituent that is an inert monovalent hydrocarbon radical; l is zero or a positive integer; m is a positive integer; n is a number from about 2 to about 8; and p is zero or a positive integer which is the difference between the valence of R and two.

4,608,434

METAL CARBOXYLATE/ALCOHOL CURING CATALYST FOR POLYCYANATE ESTER OF POLYHYDRIC PHENOL

David A. Shimp, Prospect, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 21, 1985, Ser. No. 789,679

Int. Cl.[4] C08G 73/00

U.S. Cl. 528—422 27 Claims

1. A curable composition comprising a polycyanate ester of a polyhydric phenol and a catalyst blend comprising a liquid solution of a metal carboxylate in a monohydric alcohol wherein the metal is a coordinating transition metal having 9 or more electrons in its next-to-outermost shell, wherein the carboxylate contains 4 to about 24 carbon atoms and wherein the monohydric alcohol is liquid at room temperature, has a boiling point greater than 160° C. at 760 mm Hg pressure and has a solubility of less than 10 percent by weight in water.

4,608,435

BENZO-1,4-QUINONES

Frederick H. Howell, Atherton, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 28, 1983, Ser. No. 489,360

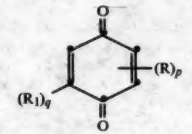
Claims priority, application United Kingdom, May 5, 1982, 8212970

The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.

Int. Cl.[4] C07C 50/00; C07D 265/32, 413/00

U.S. Cl. 544—87 8 Claims

1. A benzo-1,4-quinone compound of the formula I

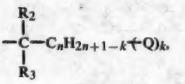


(I)

wherein

p is 1 or 2 and q is 0 or 1, provided that p+q is 1 or 2 and the R and R_1 substituents present are present in the 2- or 2- and 5-positions of the ring;

R is a radical of formula II



(II)

and

Q is a member selected from the group consisting of $—CO_2R_4$, $—CON(R_4)(R_5)$, $—OR_5$, $—OCOR_7$, $—N(R_8)(R_9)$, $—SO_2R_{12}$, —CN, Halogen, $—NO_2$ or $—COR_{13}$,

n is an integer from 1 to 20, and k is 1 or 2,

R_1 is C_1–C_8 straight or branched chain alkyl, or a radical of formula II as hereinbefore defined, and when R_1 is a radical of formula II, then R_1 and R may be the same or different;

R_2 and R_3 are the same or different and each is straight or branched chain alkyl having from 1 to 5 carbon atoms and, when Q is $—CO_2R_4$, either R_2 or R_3 is unsubstituted or is substituted by $—CO_2R_4$, the R_4 groups being independent, or R_2 or R_3 may be so linked to the radical C_nH_{2n+1-k} that there is formed a C_5–C_{12} cycloalkylene radical substituted by the group $—(CO_2R_4)_k$, the R_4 groups being independent, and

R_4 independently is H, a straight or branched chain alkyl having from 1 to 20 carbon atoms or such alkyl interrupted by 1 to 5 oxygen atoms, such groups being unsubstituted or substituted by a group $—OR_6$ wherein R_6 is C_3–C_{12} cycloalkyl, straight or branched C_3–C_{20} alkenyl, C_6–C_{10} aryl which is substituted or unsubstituted by 1 or 2 C_1–C_4-alkyl groups, or C_7–C_{13} aralkyl; or R_4 is a divalent straight- or branched alkylene group having 2 to 20 carbon atoms, a straight or branched chain alkenyl group having from 3 to 20 carbon atoms, a cycloalkyl group having from 3 to 12 carbon atoms, an aryl group having from 6 to 10 carbon atoms which is unsubstituted or substituted by a C_1–C_4 alkyl group; or an aralkyl group having from 7 to 13 carbon atoms, a 5- or 6-membered heterocyclic containing an oxygen atom selected from tetrahydrofuranyl and tetrahydropyranyl and which groups are unsubstituted or substituted by one or two C_1–C_4 straight or banched chain alkyl groups; or methyl substituted by a 5- or 6-membered heterocyclic containing an oxygen atom selected from furfuryl, tetrahydrofurfuryl or tetrahydropyran-2-yl-methyl and which groups are unsubstituted or substituted by one or two C_1–C_4 straight- or branched chain alkyl groups;

R_5 is hydrogen or a straight or branched chain alkyl group having from 1 to 20 carbon atoms, or R_4 and R_5 together with the nitrogen atom to which they are each bonded may form a saturated 5- or 6-membered heterocyclic ring selected from pyrrolidino, piperidino and morpholino, which groups are unsubstituted or substituted by one or two C_1–C_4 alkyl groups,

R_7 is H or a straight or branched chain alkyl group having from 1 to 20 carbon atoms, a straight or branched chain alkenyl having from 3 to 20 carbon atoms, a C_3–C_{12} cycloalkyl group, a C_7–C_{13} aralkyl group, or a C_6–C_{10} aryl

group which is unsubstituted or substituted by 1 or 2 C_{1-4}-alkyl groups,

R_8 is H or a straight or branched chain alkyl group having from 1 to 4 carbon atoms, and R_9 is H, a straight or branched chain alkyl group having 1 to 4 carbon atoms, or an acyl group of the formula $—COR_7$ wherein R_7 is as previously defined, or R_8 and R_9, together with the nitrogen atom to which they are each bonded, form a saturated 5- or 6-membered ring selected from pyrrolidino, piperidino and morpholino, which groups are unsubstituted or substituted by one or two C_1–C_4 alkyl groups, and when x is 1, and

R_{12} is —OH, —Cl or $—N(R_5)(R_7)$ wherein R_5 and R_7 are as previously defined, R_{13} is —H, a straight- or branched chain alkyl group having 1 to 20 carbon atoms or halogen, provided that, when R_{12} is —OH, then R_1 is a radical of formula II, or a salt thereof with an organic or inorganic acid or base.

4,608,436

PIPERIDINE COMPOUNDS

Giuseppe Cantatore, Bitonto, and Valerio Borzatta, Bologna, both of Italy, assignors to Ciba-Geigy S.p.A., Origgio, Italy

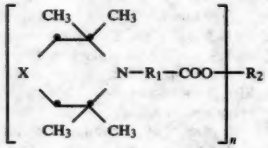
Filed Apr. 9, 1985, Ser. No. 721,936

Claims priority, application Italy, Apr. 9, 1984, 20449 A/84

Int. Cl.[4] C07D *401/12, 401/14*

U.S. Cl. 546—188 **5 Claims**

1. A compound of the formula (I)

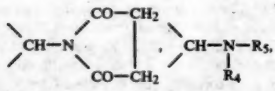


(I)

in which R_1 is C_1–C_{12}-alkylene, X is methylene, a group

$>CH—OR_3$,

in which R_3 is hydrogen, C_1–C_{18}-alkyl, C_3–C_{12}-alkenyl, C_7–C_{18}-aralkyl or C_1–C_{12}-acyl, or X is a group

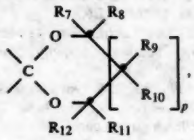


in which R_4 is hydrogen, C_1–C_{18}-alkyl, C_1–C_{18}-alkyl substituted by C_1–C_{18}-alkoxy or C_2–C_{18}-dialkylamino, or R_4 is C_5–C_{18}-cycloalkyl, C_3–C_{18}-alkenyl or C_7–C_{18}-aralkyl and R_5 is C_1–C_{12}-acyl or a group

$—COOR_6$

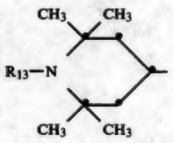
in which R_6 is C_1–C_{12}-alkyl or C_3–C_{12}-alkenyl, or X is a group

in which R_6 is as defined above or X is a group of the formula (II)

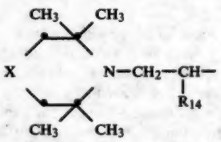


(II)

in which the radicals R_7–R_{12} can be identical or different and are hydrogen or C_1–C_4-alkyl and p is zero or 1, n is 1 or 2 and, if n=1, R_2 is a group of the formula (III) or (IV)

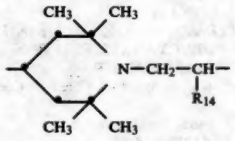


(III)



(IV)

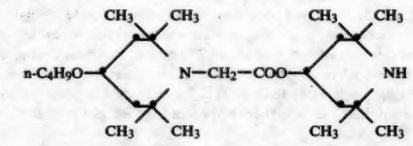
in which R_{13} is hydrogen, O˙, cyanomethyl, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl or -alkynyl, C_7–C_{12}-aralkyl or C_1–C_{12}-acyl, X is as defined above and R_{14} is hydrogen, C_1–C_6-alkyl or C_6–C_{12}-aryl, or, if n=2, R_2 is a group of the formula (V)

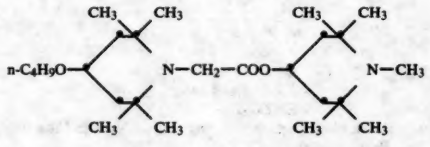


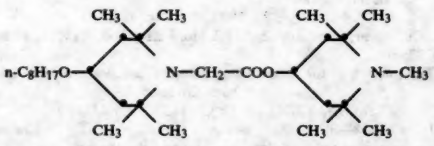
(V)

in which R_{14} is as defined above.

5. A compound according to claim 1 of the formulae







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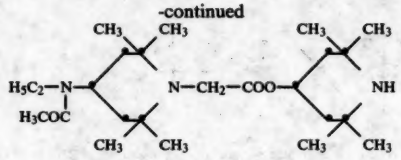
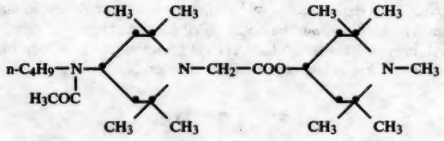


and



4,608,437

PREPARATION OF IMIDAZOLINYL BENZOIC ACIDS

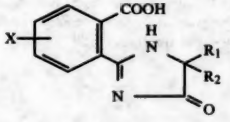
Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 279,886, Jul. 2, 1981, Pat. No. 4,544,754, which is a division of Ser. No. 74,940, Sep. 13, 1979, Pat. No. 4,297,128, which is a division of Ser. No. 914,244, Jun. 9, 1978, Pat. No. 4,188,487, which is a continuation-in-part of Ser. No. 822,458, Aug. 8, 1977, abandoned. This application Jul. 25, 1985, Ser. No. 757,814

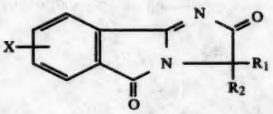
Int. Cl.[4] C07D *233/70*

U.S. Cl. 548—301 1 Claim

1. A method for the preparation of a compound of the formula:



wherein X is hydrogen, alkyl C_1–C_3, halogen or nitro; R_1 is alkyl C_1–C_4; R_2 is alkyl C_1–C_6, cycloalkyl C_3–C_6, alkenyl C_2–C_4, phenyl, halophenyl or benzyl or when R_1 and R_2 are taken together with the carbon to which they are attached they may represent cycloalkyl C_3–C_6 optionally substituted with methyl; or when R_1 and R_2 are not the same the optical isomers thereof, or the isomeric mixtures thereof; comprising reacting a compound having the formula:



where X, R_1 and R_2 are as described above, with an excess of concentrated hydrochloric acid such that the corresponding lactone hydrochloride is formed and reacting the lactone hydrochloride with one equivalent of base, whereby the desired imidazolinyl acid is obtained.

4,608,438

IMIDAZOLE DERIVATIVES

Katuyuki Ohtuka, Nagareyama; Kazuya Sasaki, Higashi-Kurume; Tadashi Arika, Kasukabe; Mamoru Yokoo, Kawagoe, and Kouji Amemiya, Kodaira, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

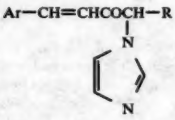
Filed Aug. 16, 1984, Ser. No. 641,198

Claims priority, application Japan, Sep. 13, 1983, 58-167560

Int. Cl.[4] C07D *233/60, 409/06, 405/06*

U.S. Cl. 548—341 7 Claims

1. An imidazole derivative represented by formula I or a biologically acceptable acid addition salt thereof:



(I)

where Ar is a phenyl group which may be substituted by alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 4 carbon atoms, alkylamino having from 1 to 4 carbon atoms, alkoxy carbonyl having from 1 to 4 carbon atoms, phenyl, halogen or hydroxyl; a naphthyl group; a furyl group; or a thienyl group which may be substituted by halogen or alkyl having from 1 to 4 carbon atoms, and R is an alkyl group having from 1 to 10 carbon atoms; an alkenyl group having from 1 to 6 carbon atoms; or a phenylalkyl group which may be substituted by halogen.

4,608,439

PROCESS FOR PREPARING SUBSTITUTED ANTHRA[1,9-CD]PYRAZOL-6(2H)-ONES

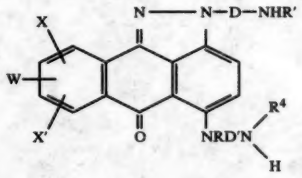
Judith L. Johnson, Ypsilanti, and Hollis D. Showalter, Ann Arbor, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 26, 1985, Ser. No. 727,637

Int. Cl.[4] C07D *231/54*

U.S. Cl. 548—357 11 Claims

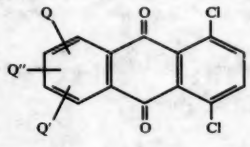
1. A process for the preparation of a substituted anthra[1,9-cd]pyrazol-6(2H)-one having the formula



V

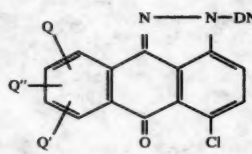
wherein X, X', and W may be the same or different and are H or OH; R is H or alkyl of from one to six carbon atoms; D and D' may be the same or different and are a straight or branched aikylene group of from two to eight carbon atoms, R_4 is H or an alkyl group of from one to eight carbon atoms, and R' is an alkyl group of from two to eight atoms which may be substituted with OH which comprises:

(a) reacting a compound having the formula



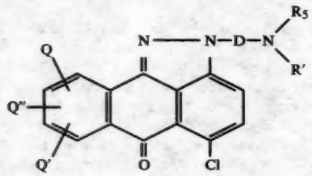
VI

with a hydrazine of formula $H_2NNHDNHR'$, wherein Q, Q', and Q'' may be the same or different and are H, benzyloxy, p-chlorobenzyloxy and p-methoxybenzyloxy, and D and R' are as defined above, to give a compound of formula



VII

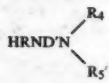
(b) reacting a compound of structural Formula VII with a benzyl halide in a suitable solvent and in the presence of an alkali carbonate to give a compound of formula



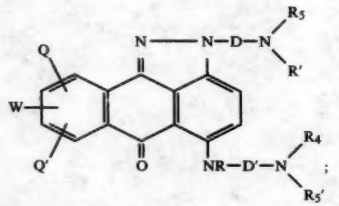
VIII

wherein Q, Q, Q'', D, and R' are defined above and R_5 is benzyl;

(c) reacting a compound of Formula VIII with a diamine of the formula



in which R_5' is H or benzyl in a suitable solvent to produce a compound of formula



IX

(d) removing the benzyl groups by catalytic means.

4,608,440

1,3,2-DIOXABORINANES

Gerald Saischek, Wels, and Hans Bodingbauer, Hellmonsödt, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

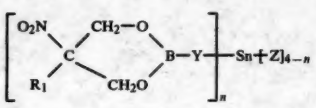
Filed Jan. 31, 1985, Ser. No. 696,760

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404253

Int. Cl.[4] C07F *7/22*

U.S. Cl. 556—7 **15 Claims**

1. A 1,3,2-dioxaborinane of the formula:



(I)

wherein R_1 is a straight-chain or branched alkyl group having 1 to 20 carbon atoms, a phenyl group or bromine, Y is a 1-oxy-2-thioethyl group, a 1-oxy-4-thiophenyl group or oxygen, each group Z independently of the others is a straight-chain or branched alkyl group having 1 to 20 carbon atoms, a cycloalkyl, bicycloalkyl or cycloalkylalkyl group, a phenyl group or a phenylalkyl group, and n is the number 1 or 2.

4,608,441

PROCESS FOR THE PREPARATION OF ARYLALKANOIC ACIDS BY OXIDATIVE REARRANGEMENT OF ARYLALKANONES

Attilio Citterio, Monza; Laura Tinucci, San Giuliano Milanese; Aldo Belli, Cornate d'Adda, and Lucio Filippini, Saronno, all of Italy, assignors to BLASCHIM S.p.A., Milan, Italy

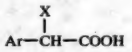
Filed Jul. 12, 1985, Ser. No. 754,538

Claims priority, application Italy, Jul. 13, 1984, 21803 A/84

Int. Cl.[4] C07C *65/11*; C07D *333/24*

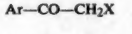
U.S. Cl. 562—466 **16 Claims**

1. A process for preparing an arylalkanoic acid of the formula



(II)

wherein X is H or methyl, and Ar is optionally-substituted homocyclic or heterocyclic aryl; which comprises adding iodine to a mixture of an arylalkanone of the formula



(I)

wherein Ar and X have the meanings indicated above, and an excess of an orthoester, heating of the reaction mixture, adding an inorganic base and finally an acid.

4,608,442

PROCESS FOR PREPARING 4-HYDROXY-2-CYCLOPENTENONES

Masayoshi Minai, Moriyama, and Tadashi Katsura, Suita, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

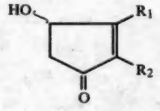
Filed Jul. 10, 1984, Ser. No. 629,488

Claims priority, application Japan, Jul. 22, 1983, 58-134867

Int. Cl.[4] C07C *45/65*

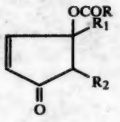
U.S. Cl. 568—346 **10 Claims**

1. A process for producing a compound of the formula:



(I)

wherein R_1 is a hydrogen atom, a C_{1-12} alkyl group or a C_{1-12} alkenyl group, and R_2 is a C_{1-12} alkyl, alkenyl or alkynyl group, which comprises treating a compound of the formula:



(II)

wherein R_1 and R_2 are each as defined above and R is a hydrogen atom or a C_{1-6} alkyl group, in a reaction medium comprising from 1 to 50 moles of water and from 0.2 to 50 moles of an inorganic or organic acid, each to one mole of compound (II).

4,608,443

METHOD FOR THE PREPARATION OF 1,4-BUTANDIAL

Juan Andrade, Kleinostheim; Günter Prescher, Hanau, both of Fed. Rep. of Germany, and Marc Samson, Lokeren, Belgium, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 24, 1985, Ser. No. 694,372

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403427

Int. Cl.[4] C07C *45/49*

U.S. Cl. 568—454 **6 Claims**

1. Method for the preparation of 1,4-butandial comprising reacting acrolein with an alkanol to form 3,3-dialkoxy-1-propene as a product, wherein the alkoxy group has from 1 to 6 carbon atoms,

contacting the said 3,3- dialkoxy-1-propene with a mixture of hydrogen and carbon monoxide as the synthesis gas and hydridotris-triphenylphosphine-rhodiumcarbonyl, and triphenylphosphine or triphenylphosphite thereby to carry out a hydroformylating reaction to obtain a hydroformylation product containing 4,4-dialkoxybutanal

distilling said hydroformylation product to thereby separate the 4,4-dialkoxybutanal therefrom and hydrolyzing said butanal to 1,4-butandial.

4,608,444

PROCESS AND ACCOMPANYING CATALYSTS FOR THE HYDROFORMYLATION OF FORMALDEHYDE TO GLYCOL-ALDEHYDE

Stephen E. Jacobson, Morristown, N.J., assignor to The Halcon SD Group, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 596,994, Apr. 5, 1984, Pat. No. 4,560,806, which is a continuation-in-part of Ser. No. 508,704, Jun. 28, 1983, abandoned. This application Mar. 1, 1985, Ser. No. 707,347

Int. Cl.[4] C07C *45/49*

U.S. Cl. 568—462 **16 Claims**

1. A process for the preparation of glycol aldehyde comprising contacting formaldehyde, carbon monoxide and hydrogen in the presence of an organic solvent selected from the group consisting of effective polar and non-polar solvents and a metal catalyst complex, under superatmospheric pressures and elevated temperatures; the metal catalyst complex having the formula:

$$MX_w(CO)_x[P(R_1)_2R_2—NR_3R_4]_y[P(R_5)_3]_z$$

wherein

M is a metal selected from the group of rhodium, cobalt, ruthenium and mixtures thereof,

x is an anion selected from the group consisting of halides, pseudohalides, hydrides and deprotonated strong carboxylic acids;

P is phosphorus;

R_1 contains 1–20 carbon atoms and is selected from the group consisting of aromatic, aliphatic and mixed groups;

R_2 contains 1–20 carbon atoms and is selected from the group consisting of alkyl, aryl and alkaryl groups, and said groups are either unsubstituted, or substituted with oxygen, nitrogen and sulfur atoms;

R_3 and R_4 contain 1–100 carbon atoms and are selected from the group consisting of hydrogen, aliphatic, aromatic and mixed groups;

w ranges from 0–3,

x ranges from 1–5,

y ranges from 1–4,

z ranges from 0–3,

separating the glycol aldehyde from the reaction mixture.

4,608,445

OXYGENATED ALICYCLIC COMPOUNDS

Wolfgang K. Giersch, Bernex; Karl H. Schulte-Elte, Onex, and Günther Ohloff, Bernex, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Nov. 23, 1982, Ser. No. 443,960

Claims priority, application Switzerland, Dec. 10, 1981, 7888/81

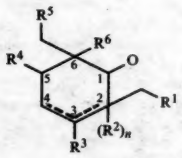
Int. Cl.[4] C07C *43/184, 43/188*

U.S. Cl. 568—667 **2 Claims**

1. A compound of formula

$$X—CH_2—CH(OH)—CH_2—R \quad (I)$$

wherein symbol R represents a C_1–C_3 alkyl radical and X a substituted cyclohexyloxy group of formula



(II)

wherein index n stands for 0 or 1, the dashed lines indicated a single bond (n=1) or a double bond in position 2 (n=0) or 3 (n=1) and each of symbols R^1 to R^6 designates a hydrogen atom or a methyl radical.

4,608,446

PROCESS FOR THE PREPARATION OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Edgar Möhring, Bergisch-Gladbach; Kuno Wagner, and Hanns P. Müller, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 965,645, Dec. 1, 1978, abandoned. This application May 25, 1982, Ser. No. 382,049

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756270

Int. Cl.[4] C07C *29/132, 29/136, 31/18*

U.S. Cl. 568—863 **9 Claims**

1. A process for producing low molecular weight, polyhydric alcohols by reducing formose in the presence of a metal catalyst comprising:

(a) introducing said metal catalyst into a reaction vessel;

(b) raising the temperature in said reaction vessel to from 80° to 220° C.;

(c) introducing hydrogen into said reaction vessel at a pressure of from 50 to 300 bars;

(d) adjusting the pH of a formose solution to between 7.5 and 12.5;

(e) introducing batch-wise into said reaction vessel said formose solution at a concentration of at least 20%, characterized in that the proportion of reducible groups determined as carbonyl groups, in the mixture inside said reaction vessel does not exceed 2% by weight, further characterized in that said formose solution is introduced in an

amount of from 3 to 30 times the amount of catalyst introduced;

(f) conducting a reduction reaction until the proportion of reducible groups, determined as carbonyl groups, falls below 0.15% by weight;

(g) removing reaction product from said reaction vessel in an amount equal to the amount of said formose solution introduced in step (e) and allowing said catalyst to remain in said reaction vessel;

(h) repeating steps (b) through (g) until the desired quantity of reaction product has been obtained.

4,608,447

PROCESS FOR THE PRODUCTION OF ALCOHOLS

Terry J. Mazanec, Solon; Gary V. Goeden, North Royalton, and John G. Frye, Jr., Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 1, 1985, Ser. No. 707,270

Int. Cl.[4] C07C *29/00, 31/08*

U.S. Cl. 568—902 17 Claims

1. A process for the conversion of methanol to alcohols containing at least two carbon atoms which process comprises reacting methanol with carbon monoxide and/or hydrogen at elevated temperature and superatmospheric pressure in the presence, of a catalyst consisting of (i) an oxide of Th and/or U and (ii) one or more alkali metals the latter being present in an amount of at least 1% by weight of alkali metal based on the total weight of the oxide and alkali metal.

4,608,448

PROCESS FOR PRODUCING 2,5-DICHLORO-P-XYLENE

Young-Jin Lee, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 948,656, Oct. 5, 1978, Pat. No. 4,334,112. This application Nov. 24, 1981, Ser. No. 324,622

Int. Cl.[4] C07C *17/12*

U.S. Cl. 570—109 3 Claims

1. A process for producing dichlorinated p-xylene having a high ratio of 2,5-dichloro-p-xylene to 2,3-dichloro-p-xylene isomers which comprises reacting 2-chloro-p-xylene and anhydrous ferric chloride at a temperature of from 25° C. to 150° C. and wherein said reaction is carried out with the reactants in contact with a catalytically effective amount of catalyst chosen from the group consisting of antimony halides, aluminum halides and combinations of antimony halides and aluminum halides with organic sulfur compounds characterized by the presence of divalent sulfur.

4,608,449

PROCESS FOR THE PRODUCTION OF ETHANE AND/OR ETHYLENE FROM METHANE

Manfred Baerns, Aeskulapweg 20, D-4630 Bochum, Fed. Rep. of Germany, and Wilhelm Hinsen, Ratingen, Fed. Rep. of Germany, assignors to Manfred Baerns, Bochum, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,407

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1982, 3237079

Int. Cl.[4] C07C *2/00*

U.S. Cl. 585—500 22 Claims

1. In a process for the production of ethane and/or ethylene by heterogeneous catalytic reaction of methane and oxygen carried out in the presence of a suitable catalyst of the type exemplified by lead oxide, manganese oxide, antimony oxide, tin oxide, bismuth oxide, cadmium oxide, thallium oxide and indium oxide or mixtures thereof and optionally in the presence of a suitable catalyst carrier of the type exemplified by aluminum oxide (Al_2O_3), silica (SiO_2) and titania (TiO_2), the improvement comprising performing the reaction continuously at temperatures between 500° C. and 900° C. at oxygen partial pressures of less than 0.5 bar at the reactor entrance, wherein the ratio of the methane partial pressure to the oxygen partial pressure is greater than one.

4,608,450

TWO-STAGE MULTIFORMING OF OLEFINS TO TETRAMERS

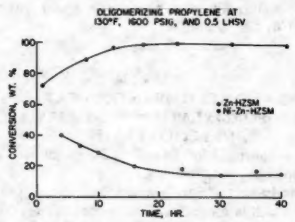
Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 10, 1984, Ser. No. 639,978

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.[4] C07C *2/02*

U.S. Cl. 585—517 10 Claims



1. A process for preparing olefinic tetramer comprising:

(a) contacting in a first stage a C_3 or C_4 olefin stream or mixture thereof, in the liquid state with an Ni-HZSM-5 catalyst at a temperature of from about 80° to 200° F. and a pressure of about 400 to 1600 psig to produce a first effluent containing at least 70% by weight dimer of said C_3 or C_4 olefin; and

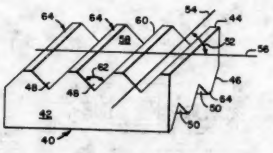
(b) contacting in a second stage the first effluent in the liquid state with a second Ni-HZSM-5 catalyst at a temperature of from about 250° to 450° F. and a pressure of 200 to 800 psig to produce a second effluent containing at least 60% tetramer of said C_3 or C_4 olefin or mixture thereof.

4,608,451

CROSS-GROOVED SOLAR CELL

Geoffrey A. Landis, Providence, R.I., assignor to Spire Corporation, Bedford, Mass.

Filed Jun. 11, 1984, Ser. No. 619,225
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—256 7 Claims



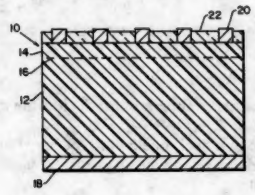
1. A solar cell of improved conversion efficiency due to path length (L) enhancement of incident radiation comprising:
(a) a thin semiconductor wafer having a front surface and an opposed back surface;
(b) both said front surface and said back surface provided with a plurality of spaced parallel grooves;
(c) the direction of said plurality of spaced parallel grooves provided on said front surface being at an angle with respect to the direction of said plurality of spaced parallel grooves provided on said back surface;
(d) respective contacts provided on the opposed grooved surfaces and having a single continuous p-n junction between said opposed grooved surfaces;
(e) said angle being at least about 10°;
(f) said thin semi-conductor wafer having a thickness from about five to about fifty microns;
(g) said plurality of spaced parallel grooves being formed with a spacing of from about two to about thirty microns, said spacing being less than said thickness of said wafers;
(h) said plurality of opposed grooved surfaces effecting multiple internal reflections of said incident radiation within said solar cell.

4,608,452

LITHIUM COUNTERDOPED SILICON SOLAR CELL

Irving Weinberg, Rocky River, and Henry W. Brandhorst, Jr., Berea, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 7, 1984, Ser. No. 669,140
Int. Cl.[4] H01L *31/06, 31/18*
U.S. Cl. 136—261 18 Claims



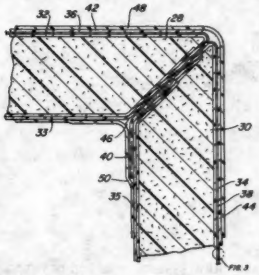
16. A radiation damage resistant solar cell comprising
a wafer of p-type boron doped silicon having lithium ions implanted therein in small enough quantities such that said wafer remains p-type after lithium addition, said wafer having
an n^+ region formed by phosphorus ions implanted therein adjacent to a surface of said wafer,
a first electrical contact on said surface adjacent to said n^+ region, and
a second electrical contact on an opposite surface of said wafer.

4,608,453

ELECTRO-MAGNETIC INTERFERENCE SHIELD

Richard B. Freeman, Wilmington, Del., assignor to The Budd Company, Troy, Mich.

Filed Aug. 20, 1984, Ser. No. 642,005
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 MS 7 Claims



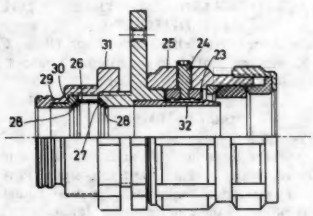
1. A shelter having electro-magnetic shielding comprising:
(a) a plurality of panels,
(b) a plurality of metallic sheets on the exterior surfaces of said panels and extending around the edges of said panels;
(c) layers of fibrous material on opposite sides of each of said plurality of metallic sheets;
(d) means for joining together and assembling said panels with said metallic sheets so that portions of said metallic sheets associated with adjacent panels extend beyond said panels inwardly into said shelter; and
(e) said portions of said metallic sheets being metallurgically joined to provide a continuous shield around said shelter.

4,608,454

TENSION RESISTING ELECTRICAL CABLE GLAND

Franz Lackinger, 9 Sligo Road, Kenmare, Krugersdorp, Transvaal Province, South Africa

Continuation-in-part of Ser. No. 543,888, Oct. 23, 1983, abandoned. This application Mar. 8, 1984, Ser. No. 560,833
Int. Cl.[4] H02G *3/06*
U.S. Cl. 174—65 SS 14 Claims



1. An electrical cable gland comprising a body having a passage therethrough, and an armour clamp assembly comprising at least two gripping dogs spaced apart about the circumference of the cable gland and being individually movable toward each other by screw threaded fasteners extending through a side wall of the cable gland in a roughly radial

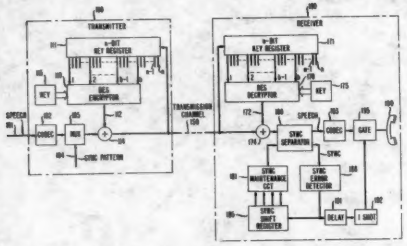
direction, with the gripping dogs being held captive but rotatable on the inner ends of the fasteners.

4,608,455

PROCESSING OF ENCRYPTED VOICE SIGNALS

Bruce E. McNair, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Holmdel, N.J.

Filed Apr. 5, 1982, Ser. No. 365,630
Int. Cl.[4] H04L *9/02*
U.S. Cl. 178—22.17 **11 Claims**



9. In an encryption system arranged to provide an encrypted version of a composite signal including speech and synchronization information, said encrypted version being formed by combining said composite signal, bit by bit, with a key stream signal formed by transforming a plurality of already encrypted bits stored in a first n-bit key register in accordance with a preselected multibit encryption key, apparatus for reducing the effects of an error burst occurring in a decrypted version of said signal as a result of a transmission error of one or more bits, comprising:

(a) means for forming said decrypted version by combining said encrypted version, bit by bit, with a key stream formed by transforming a plurality of most recently encrypted bits stored in a second n-bit key register in accordance with said preselected multibit encryption key,

(b) means responsive to said decrypted version forming means for separating said speech and synchronization information,

(c) means for monitoring said synchronization information to detect an erroneous pattern indicative of the occurrence of said error burst, and

(d) means for disabling application of said speech information to a utilization device for a period determined in response to said monitoring means.

4,608,456

DIGITAL AUDIO SCRAMBLING SYSTEM WITH ERROR CONDITIONING

Woo H. Paik; Jerrold A. Heller, both of San Diego, Calif., and Gordon K. Walker, Boxborough, Mass., assignors to M/A-COM Linkabit, Inc., San Diego, Calif.

Filed May 27, 1983, Ser. No. 498,824
Int. Cl.[4] H04M *1/70*
U.S. Cl. 179—1.5 S **24 Claims**

10. A system for scrambling an audio signal, comprising

means for converting an analog audio signal into a digital signal to provide a sequence of digital signal samples corresponding to the analog audio signal;

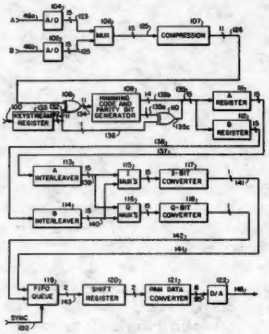
means for compressing each digital signal sample to provide compressed signal samples having a sign bit, a first given number of exponent bits and a second given number of mantissa bits;

means for interleaving bits from a plurality of successive samples; and

means for serializing the interleaved bits in order to separate the bits from any single sample by at least a predetermined duration associated with a given type of interference signal;

wherein the audio signal includes stereo audio components and the aforesaid means provide separate interleaved, compressed signal samples for the respective stereo audio components, the system further comprising

means for combining individual bits from the separate interleaved, compressed signal samples for the respective stereo audio components to provide a series of two-bit digital words, wherein the exponent bits and the code bits occupy the bit position in the digital words having the lower error rate and the mantissa bits occupy the other bit position in the digital words; and



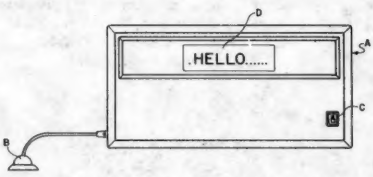
means for converting the digital words to an analog signal having a level related to the binary value of the digital words.

4,608,457

TELECOMMUNICATIONS DEVICE FOR THE HEARING IMPARED

Stephen L. Fowler, Box 156, Moore, S.C. 29369, and Allison T. Brown, Box 125, Simpsonville, S.C. 29681

Filed Apr. 11, 1984, Ser. No. 599,192
Int. Cl.[4] H04M *11/00*
U.S. Cl. 179—2 A **1 Claim**



1. A telephone assistance apparatus for the hearing impaired, comprising:

means responsive to a dual tone multifrequency output of a telephone receiver to produce an electrical signal indicative of said output;

automatic gain control circuitry to receive said signal to assure that the amplitude thereof is within a predetermined range;

a first amplifier communicating with said automatic gain control circuitry;

a comparator communicating with and receiving the amplified signal from said first amplifier to provide a high output voltage in response to said signal;

a visually perceivable light source communicating with said

comparator and activated thereby in response to the amplified signal therefrom;

a tone decoder also communicating with said amplifier for receiving the amplified signal therefrom and converting said amplifier signal into a digital binary code corresponding to said dual tone multifrequency output;

random access memory for receiving and storing the digital binary code from said tone decoder;

a microprocessor communicating with said random access memory and said tone decoder to direct the action of said random access memory in accordance with preprogrammed instruction; and

a visual display screen for displaying alphabetic, numeric, and punctuation data from said random access memory in response to instructions from said microprocessor.

4,608,458

AUTOMATIC TELEPHONE ANSWERING APPARATUS

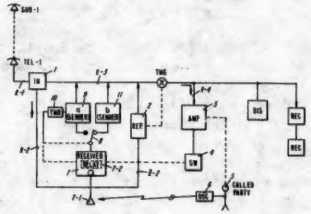
Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Feb. 1, 1984, Ser. No. 576,213

Claims priority, application Japan, Feb. 3, 1983, 58-16710

Int. Cl.[4] H04M *11/10*

U.S. Cl. 179—2 A **3 Claims**



1. An automatic telephone answering apparatus comprising:

means for detecting a telephone call from a calling telephone and in response engaging a loop circuit;

means for reproducing a first message after said loop circuit is engaged in order to announce a name of a called party and ask a caller's name;

a wireless transceiver carried by the called party;

means for amplifying and reproducing a caller's voice in the region of a called party telephone set to which said apparatus is connected when the caller gives his name in response to the first message;

means for receiving an acknowledgement signal from said transceiver to automatically reproduce a second message and transmit said second message to the calling telephone;

timer means for establishing time durations; and

means for reproducing a third message after a first time duration established by the timer has elapsed when the caller does not give his name in response to the first message.

4,608,459

TELEPHONE ANSWERING DEVICE

Keiichi Nakamura, Tama, and Hideyuki Horiuchi, Tokyo, both of Japan, assignors to Tandy Corporation, Fort Worth, Tex.

Division of Ser. No. 324,154, Nov. 23, 1981, Pat. No. 4,469,919.

This application Aug. 24, 1984, Ser. No. 632,539

Claims priority, application Japan, Feb. 20, 1981, 56-23928; Feb. 20, 1981, 56-23929; Feb. 20, 1981, 56-23930; Feb. 20, 1981, 56-23931; Mar. 23, 1981, 56-41893; Mar. 23, 1981, 56-41894; Mar. 31, 1981, 56-47688

Int. Cl.[4] H04M *1/64*

U.S. Cl. 179—6.03 **17 Claims**

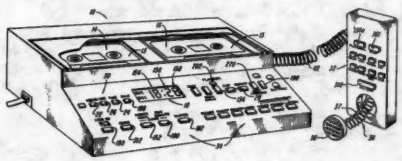
1. A telephone answering device for receiving incoming messages, comprising:

message counter means for assigning a unique message number to an incoming message and providing digital signals representative of the message number;

processor means;

recorder means having a recording medium which includes first and second tracks and means controlled by the processor means and responsive to the digital signals provided by the message counter means for recording signals representing an incoming message on the first track and the digital signals on the second track;

playback means controlled by the processor means, for playing back incoming messages recorded on the first track and for simultaneously reading back the digital



signals recorded on the second track and transmitting the digital signal to the processor means while the message recorded on the first track is being played back;

a user manipulable input for designating a selected message number;

means responsive to said selected message number, for controlling the playback means to automatically locate on the recording medium the beginning of the selected message recorded on the first track which corresponds to the selected message number; and

means for replaying the message corresponding to the selected message number.

4,608,460

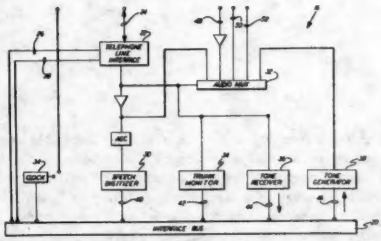
COMPREHENSIVE AUTOMATIC DIRECTORY ASSISTANCE APPARATUS AND METHOD THEREOF

Nicholas J. R. Carter, Shelton; Walter Guilarte, Monroe; Ravindra T. Masand, Shelton; Terrance S. Martin, Stamford; Francisco A. Middleton, Newtown, and Santanu Das, Shelton, all of Conn., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 17, 1984, Ser. No. 651,375

Int. Cl.[4] H04M *3/42*

U.S. Cl. 179—6.11 **18 Claims**



1. Apparatus for automatically providing comprehensive assistance to a calling subscriber of a communication system having a plurality of subscribers interconnected thereto; said apparatus comprising:

means for establishing a communication link with said calling subscriber, said establishing means being responsive to a conventional system call made by said subscriber;

means for accepting, via said communication link, a prespecified number of tonal inputs from said calling subscriber, said prespecified number being generally less than the length of a name of interest, each said tonal input being representative

of a letter corresponding to one letter of said name of interest to said calling subscriber, said accepting means also having default means associated therewith for automatically transferring said calling subscriber to an operator upon failure of said accepting means to receive said tonal inputs;

means for digitizing said tonal inputs;

a storage medium having a plurality of indices stored therein, each one of said plurality of indices being a digitized representation of said prespecified number of letters of the name of each said plurality of subscribers and having a unique identifier associated therewith, each identifier being representative of a different one of said plurality of subscribers whereby said unique identifiers associated with any one particular index can be accessed;

a scannable data file, said data file having a plurality of items stored therein, each of said plurality of items having an identifier portion and a speech digitized portion, said speech digitized portion including information for said calling subscriber;

a temporary storage medium;

a program controller for controlling said tonal input digitizing means for converting said tone inputs from said calling subscriber to a digitized index, searching said storage medium for all said identifiers associated with said index, retrieving from said data file each so identified item and storing said identified items in said temporary storage medium; and

means, responsive to said controller, for providing said subscriber with a vocal rendition of each one of said identified items stored in said temporary storage medium.

4,608,461

SUBSCRIBER CIRCUIT FOR A TELEPHONE NETWORK

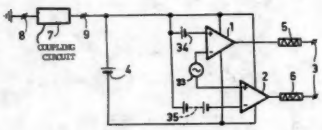
Aloysius J. Nijman, and Franciscus A. C. M. Schoofs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1983, Ser. No. 459,858

Claims priority, application Netherlands, Nov. 12, 1982, 8204377

Int. Cl.⁴ H04M *19/00*

U.S. Cl. 179—16 AA **3 Claims**



1. A subscriber circuit for a telephone network, said subscriber circuit being connected to a pair of subscriber wires and comprising that portion of a subscriber's current path which is internal to a telephone central office, said internal portion of the subscriber's current path being conductively coupled to a point of fixed reference potential, characterized in that said internal portion of the subscriber's current path is connected to both of the subscriber wires and is conductively coupled to said point of fixed reference potential solely by a coupling circuit having only two coupling terminals, one of said coupling terminals being a subscriber's current path terminal which is connected by said internal portion of the subscriber's current path to each of the subscriber wires and the other of said coupling terminals being a reference terminal which is connected to said point of fixed reference potential; the impedance of said coupling circuit for direct current being low as compared with the impedance thereof for alternating current.

4,608,462

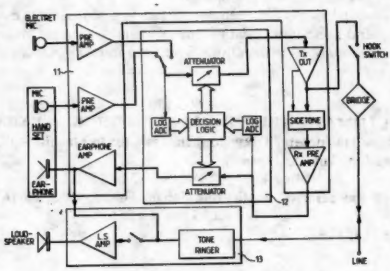
TELEPHONE INSTRUMENT CIRCUIT

Peter F. Blomley, Bishops Stortford; Kenneth A. Arton, Sawbridgeworth; Edward J. Whittaker, Bishops Stortford, and Andrew P. Lefevre, Dunmow, all of Great Britain, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 626,004, Jun. 29, 1984, abandoned. This application Oct. 19, 1984, Ser. No. 662,487

Int. Cl.⁴ H04M *1/60*

U.S. Cl. 179—81 B **6 Claims**



1. An integrated circuit for a telephone instrument, said circuit being adapted to provide a basic telephone requirement, comprising:

a transmit channel preamplifier and amplifier,

a receive channel preamplifier and amplifier, and

power supplies for operation of at least one ancillary circuit adapted to supply services other than said basic requirement, wherein one of said power supplies, for a first ancillary circuit incorporating an audio amplifier for loudspeaker operation, has means for disabling said audio amplifier under conditions where available line current falls below a predetermined value.

4,608,463

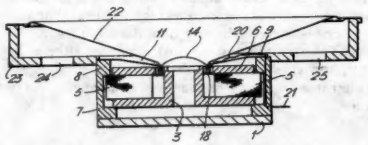
ELECTRO-ACOUSTIC TRANSDUCER

David A. Burgess, Harlow, and Malcolm R. King, Hertford, both of United Kingdom, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 19, 1984, Ser. No. 632,570

Int. Cl.⁴ H04R *9/00, 9/04*

U.S. Cl. 179—115.5 R **6 Claims**



1. An electro-acoustic transducer of the moving coil type, which includes a driven unit including a drive coil, and a magnet unit including a magnet and two pole-pieces so located as to define an annular air gap in which the coil is located, wherein the driven unit further includes a substantially circular central portion whose outer periphery is secured to the coil, and an outer portion whose inner periphery is secured to the coil and whose outer periphery is secured to a member of said transducer, which contains said magnet unit at a flat face of said member, wherein said member is substantially cylindrical, wherein a flat cup-like member of large diameter than said member is secured to said flat face, and wherein the driven unit also includes a cone whose inner periphery is secured to the

coil and whose outer periphery is secured to the outer rim of the cup-like member.

4,608,464

INTERFACE CIRCUIT INTERCONNECTING A BIDIRECTIONAL TWO-WIRE LINE WITH UNIDIRECTIONAL FOUR-WIRE LINES

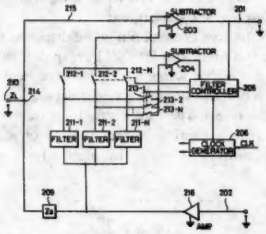
Yuichi Morikawa, Mitaka; Hirohiko Sato, Iruma; Eiichi Amada, Kokubunji; Toshiro Suzuki, Hachiouji; Hirotoshi Shirasu, Yokohama, and Hiroshi Kuwahara, Kodaira, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 291,938, Aug. 11, 1981, abandoned. This application May 1, 1984, Ser. No. 605,904

Claims priority, application Japan, Aug. 15, 1980, 55-111689

Int. Cl.⁴ H04B *3/20, 1/58*

U.S. Cl. 179—170.2 **2 Claims**



1. An interface circuit for coupling a two-wire line with a four-wire line having a receiving line and a transmitting line to prevent a signal received from the receiving line from being transmitted to the transmitting line, comprising:

a buffer amplifier having an input coupled to said receiving line and an output coupled to said two-wire line through a terminal impedance;

a first and a second subtractor each of which has a first input coupled to said two-wire line and a second input, one of the subtractors having an output coupled to the transmitting line;

a group of filters to be selectively connected between said output of said buffer amplifier and said second input of said first and second subtractors;

filter selection means for selectively coupling a pair of filters from among said group of filters, respectively, to the second inputs of said first and second subtractors; and

filter controller means for comparing the outputs of said first and second subtractors and for controlling said filter selection means so as to finally select a filter to minimize the leakage of a signal from said four-wire receiving line to said four-wire transmitting line.

4,608,465

KEYBOARD

Yuji Harada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 631,018, Jul. 17, 1984, abandoned, which is a continuation of Ser. No. 516,728, Jul. 25, 1983, abandoned. This application Jul. 2, 1985, Ser. No. 750,999

Claims priority, application Japan, Aug. 25, 1982, 57-146181

Int. Cl.⁴ H01H *13/70*

U.S. Cl. 200—5 A **2 Claims**

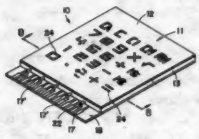
1. A keyboard switch comprising:

a printed circuit board including at least one stationary contact disposed on one surface thereof;

spacing means mounted on said one surface of said printed circuit board;

a movable contact mounted with said spacing means in spaced relation to an associated stationary contact for movement theretoward to make electrical connection therewith; and

a decoration sheet mounted on said spacing means with each said movable contact lying between said decoration sheet and said printed circuit board, said decoration sheet including an embossed key symbol indicia formed therein in association with each said movable contact so that a click operation takes place about said embossed key symbol indicia when a depressive force is applied thereto to move said associated movable contact into electrical connection with said associated stationary contact.



4,608,466

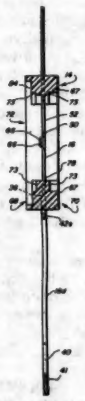
STATOR FOR SWITCH ASSEMBLY

James A. Bornhofen, Aurora, Ill., assignor to Standard Grigsby, Inc., Aurora, Ill.

Continuation of Ser. No. 508,134, Jun. 27, 1983, abandoned. This application Sep. 19, 1985, Ser. No. 777,574

Int. Cl.⁴ H01H *1/00, 19/00, 21/00*

U.S. Cl. 200—11 D **6 Claims**



1. A switch having a stator and a rotor, the improvement in the stator comprising:

a contact having a first sheet portion defined by a first, resilient, conductive material with a first edge to engage the rotor with spring pressure;

a terminal connector having a second sheet portion defined by a second material that is conductive and more rigid than the first material and a second edge; and

means joining the sheet portions of the contact and terminal connector together along a subtstantial length of said first and second edges to define a composite flat sheet consist-

ing of at least a part of the first sheet portion and at least a part of the second sheet portion,

said composite flat sheet being thinner than the combined thickness of the first and second sheet portions; and

carrier means supporting said composite flat sheet so that at least a part of the first sheet portion can flex as the rotor operates on the stator.

4,608,467

SWITCH DEVICE

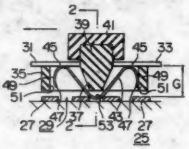
Yasuo Sota, Tsurugashima, Japan, assignor to Elmec Corporation, Tsurugashima, Japan

Filed Dec. 11, 1984, Ser. No. 680,542

Claims priority, application Japan, Dec. 14, 1983, 58-192743[U]

Int. Cl.⁴ H01H *1/00, 15/06*

U.S. Cl. 200—16 D **3 Claims**



1. In a switch device comprising a nonconductive board member having arranged thereon a row of fixed electric contacts spaced at regular intervals one from the other, a conductive plate arranged in a plane parallel to that of said nonconductive board member and spaced a fixed distance from said row of fixed contacts, a moveable electric contact formed by bending a conductive plate substantially in the shape of an inverted letter W incorporating therein a first curve portion at the center thereof, which curved portion engages said fixed contacts and second curves positioned, respectively, on opposite sides and outwardly of said first curve and resiliently held in contact with said conductive plates, said second curves ending in outer tips of said moveable contact, a holder resiliently containing said moveable contact without attachment of said moveable contact thereto, said moveable contact being arranged therein such that a one of said tips of said moveable contact engages said holder when said holder is moved in a given direction along said row of fixed contact, the other tip engaging said holder when the holder is moved in the opposite direction, said holder being disposed between said conductive plate and said row of fixed contacts and having means for moving along said row of fixed contacts, the improvement comprising:

third curved surfaces formed outwardly of said second curves of said moveable contact member and ending in said outer tips said third curved surfaces engaging, respectively, walls of said holder as said holder is moved in a one direction or the other.

4,608,468

HERMETICALLY SEALED IMPACT SWITCH

Monty W. Bai, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1984, Ser. No. 686,360

Int. Cl.⁴ H01H *35/14;* **H01L** *41/08*

U.S. Cl. 200—61.45 R **1 Claim**

1. A hermetically sealed impact switch having an electrical input and an electrical output, said hermetically sealed impact switch comprising:

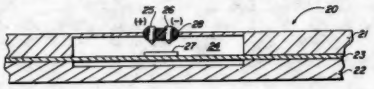
an insulative center plate having an opening disposed therethrough;

an insulative beam having a first end and a second end opposite said first end, said insulative beam being disposed in the opening of said insulative center plate and said first and second ends being coupled to said insulative center plate;

a conductive mass being coupled to said insulative beam;

an insulative top plate having a groove disposed therein, said insulative top plate being coupled to said insulative center plate such that the groove of said insulative top plate is disposed above the opening of said insulative center plate;

a first conductive contact pin being disposed through said insulative top plate and into the groove of said insulative top plate, said first conductive pin being coupled to one of



said electrical input and electrical output of said hermetically sealed impact switch; and

a second conductive contact pin being disposed through said insulative top plate and into said groove of said insulative top plate such that when said insulative beam flexes said first and second conductive contact pins are coupled by said conductive mass, said second conductive pin being coupled to a remaining one of said electrical input and electrical output of said hermetically sealed impact switch.

4,608,469

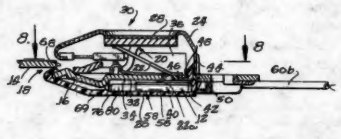
SAFETY BELT BUCKLE WITH SWITCH

Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Jan. 4, 1985, Ser. No. 688,692

Int. Cl.⁴ H01H *3/16*

U.S. Cl. 200—61.58 B **15 Claims**



1. In a safety belt buckle the combination comprising:

a buckle frame having an open forward end;

said buckle frame being channel shaped and having a central bottom web and a pair of upstanding sidewalls;

a tongue plate having a tip for insertion into the buckle frame;

latch means for removably latching the tongue plate tip within the buckle frame;

a bottom cover mounted substantially beneath the bottom web of said buckle frame and defining therewith an enclosed space between the web and defining therewith an enclosed space between the web of the buckle frame and the bottom cover;

a switch subassembly mounted in said enclosed space and interlocked with the bottom at a predetermined position on the bottom cover,

said switch subassembly including a housing and internal electrical switch contacts within the housing and with the housing substantially enclosing and covering the switch contacts from foreign matter, and

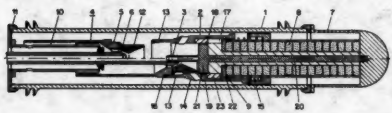
a switch actuator projecting from the switch housing upwardly through an opening in the bottom web and disposed adjacent the latch means so as to be actuated by the tongue plate tip upon insertion thereof into latching engagement with the latch means.

4,608,470

HIGH-VOLTAGE SWITCH

Walter Bischofberger, Niederweningen; Heinz Eichholzer, Thalwil; Werner Graber, Ennetbaden, and Jiri Talir, Baden, all of Switzerland, assignors to BBC Brown Boveri & Company Ltd., Switzerland

Filed Jan. 30, 1985, Ser. No. 696,265
Claims priority, application Switzerland, Feb. 6, 1984, 548/84
Int. Cl.[4] H01H *33/16*
U.S. Cl. 200—144 AP 19 Claims



1. High-voltage switch comprising

a first electric connection and a second electric connection,

a fixed contact member (2) which contains two contact pieces, these being a rated-current contact which is electrically conductively connected to the first electric connection at least in the on position, and a fixed arcing contact (3),

a moving contact member (4) which is electrically conductively connected to the second electric connection and which contains two opposite contact pieces, these being a moving rated-current contact (5) and a moving arcing contact (6).

an insertion resistance (8) which is placed between the first electric connection and a resistance contact (9) and which is bridged in the course of the switching-on process, characterised in that

the rated-current contact of the fixed contact member (2) is constructed as a sliding rated-current contact (14) which can be displaced, with respect to the fixed arcing contact (3), by the moving contact member (4) in the course of the switching-on movement of the latter against the force of elastic means in a limited way in the switching-on direction from a basic position which is assumed at least in the off position, and

is electrically conductively connected to the fixed arcing contact (3) at least in the on position, and

is in electric contact, at least in the on position but not in the basic position, with a rated-current bridging contact (19) which is electrically conductively connected to the first electric connection,

the resistance contact (9) is electrically conductively connected, during the switching-on process at least until the bridging, which occurs in the course of the latter, of the insertion resistance (8), at least to that contact piece of the fixed contact member (2) which is the first to be contacted by the corresponding opposite contact piece in the course of the switching-on movement of the moving contact member (4).

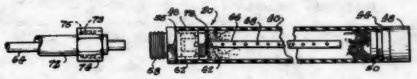
4,608,471

IMPEDER WITH AGGREGATE FERROMAGNETIC CORE

Lawrence P. Vollmuth, Wheaton, and Lucid L. Byrd, Palos Park, both of Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Mar. 5, 1985, Ser. No. 708,262
Int. Cl.[4] H05B *6/02*
U.S. Cl. 219—8.5 9 Claims

1. A combination for use in a mill for roll-forming tubing including a feed station for supplying an elongated steel strip in flat form and a station where the strip is transversely bent from its generally planar condition causing the lateral edges of the strip to be brought together in abutting relationship, said combination comprising an induction coil disposed about the bent portion of said strip for inducing current flow through the location where said lateral edges are first brought into abutting relationship to heat said lateral edges to plasticity, a weld rolls station where the plasticized lateral edges are firmly pushed together to complete welding of the tube, and an impeder disposed extending inside said coil adjacent the location where said lateral edges are first brought into abutting relationship, said impeder comprising:



an outer shell made of strong, heat resistant material;

a core disposed inside said shell, said core being formed by loose ferrite particles with the major dimension of each of said ferrite particles being in the range of one-quarter inch to 600 mesh; and

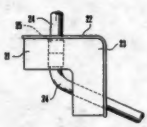
means for causing passage of a coolant through the core material.

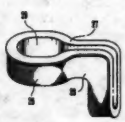
4,608,472

METHOD OF AND APPARATUS FOR STERILIZING DEVICES

Yasuaki Kato, Hiroshima, Japan, assignor to Japan Medical Supply Co Ltd, Hiroshima, Japan

Filed Feb. 24, 1984, Ser. No. 583,328
Claims priority, application Japan, Mar. 14, 1983, 58-40818; Apr. 21, 1983, 58-58797; Aug. 30, 1983, 58-159951
Int. Cl.[4] H05B *6/64*
U.S. Cl. 219—10.43 10 Claims





1. A method of heat-sterilizing a device comprising the steps of:

disposing a conductor element near said device;

exposing said conductor element to a magnetic field generated by a coil connected to a high-frequency current, said coil being shaped generally as an ellipse bent at substantially a right angle, having a vertical and a horizontal side, one side being of an enlarged inside diameter compared with another side; and

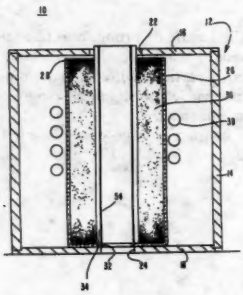
allowing an eddy current to be generated in said conductor element to responsively heat the conductor element and then allowing the generated heat to be transferred to the device thereby heat-sterilizing the device.

4,608,473

MODIFIED ZIRCONIA INDUCTION FURNACE

Un C. Paek, West Windsor Township, Mercer County, and Charles M. Schroeder, Jr., North Hanover Township, Burlington County, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Division of Ser. No. 383,066, May 28, 1982, Pat. No. 4,533,378.
This application Apr. 29, 1985, Ser. No. 727,998
The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.
Int. Cl.[4] H05B *6/30*; C03B *27/02*; F27B *14/10*
U.S. Cl. 219—10.49 R 3 Claims



1. A furnace for heating a silica lightguide preform to an elevated temperature in order to draw a fiber therefrom, comprising:

a housing;

a tubular zirconium dioxide heating element located within said housing; and

a thin coating of silica on at least a portion of the inside surface of the tubular heating element.

4,608,474

NEGATIVE THERMAL EXPANSION METAL ELECTRICALLY CONNECTED TO MOTOR MEANS FOR MICROWAVE OVEN

Kenichi Kohka, Amagasaki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 2, 1983, Ser. No. 519,700
Claims priority, application Japan, Aug. 4, 1982, 57-119023[U]
Int. Cl.[4] H05B *6/64*
U.S. Cl. 219—10.55 R 6 Claims

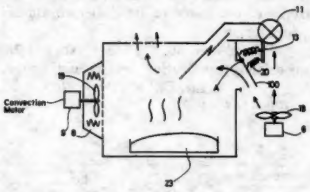
1. A high frequency heating apparatus comprising:

damper means for opening and closing an air intake port of a heating chamber, said damper means including a member made of a material such that the shape of the member alters upon heating or cooling thereof so that control of opening and closing said damper means can be effected by selected delivery of an electric heating current to said damper means;

an electric cooling blower motor including motor winding means for rotating a cooling fan which cools electrical components and said member;

means for deriving said electric heating current from current in said motor winding means; and

means for selectively applying said electric heating current to said member of said damper means;



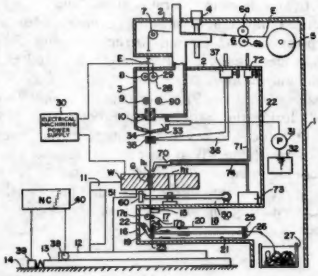
said cooling fan directing air on said member to accelerate the cooling thereof when no heating current is applied thereto.

4,608,475

METHOD OF AND APPARATUS FOR RESETTING A WIRE ELECTRODE IN AN OPERATING SETUP ON AN ELECTROEROSION MACHINE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawa, Japan

Continuation of Ser. No. 261,269, May 6, 1981, Pat. No. 4,513,191. This application Sep. 6, 1984, Ser. No. 648,292
Claims priority, application Japan, May 13, 1980, 55-62297; May 14, 1980, 55-62735
Int. Cl.[4] B23P *1/08*
U.S. Cl. 219—69 W 5 Claims



1. An apparatus for automatically resetting a wire electrode in an operating setup on an electroerosion machine including an electroerosion power supply for applying a machining electric current to the wire electrode, wire drive means for axially advancing the wire electrode extending in a continuous stretch from a supply side to a collection side and liquid supply means for furnishing a machining liquid to the wire electrode and a machining gap formed thereby with a workpiece, the apparatus comprising: (a) switch means associated with the power supply and the wire drive means for shutting off the supply of said machining electric current to said wire electrode and halting a machining axial advance of said wire electrode in said continuous stretch, thereby terminating a previous machining operation commenced with a given starting hole; (b)

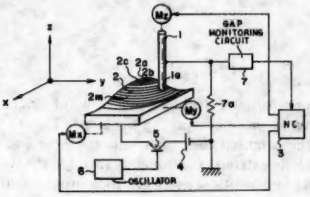
wire breaking means comprising (b1) grooving cutter means having at least two blade means disposed in a region adjacent to the workpiece and at one of the opposite sides thereof for forming said wire electrode in said region with at least two coplanar grooves substantially symmetrical about the center axis thereof and (b2) tension means for applying a tension to said wire electrode to break the latter at said grooves; (c) means for threading said wire electrode from one broken end portion thereof through a next starting hole preformed in a workpiece for machining a contour therein in the subsequent machining operation to reestablish the continuous stretch of said wire electrode between said supply side and said collection side and means for heating, prior to breaking, said wire electrode at least along said region to effect a hardening thereof.

4,608,476

RETRACTION CONTROL FOR 3D-PATH CONTROLLED GENERIC ELECTRODE ELECTROEROSION

Akihiko Shimizu, Kanagawa, Japan, assignor to Japax Incorporated, Kanagawa, Japan

Filed Sep. 22, 1983, Ser. No. 534,591
Int. Cl.[4] B23H *7/26, 7/14*
U.S. Cl. 219—69 M 11 Claims



1. A method of controlling a numerically 3D-path controlled generic-electrode electroerosion process wherein an axial electrode tool having an end portion of a generic electrode form is arranged to establish an electroerosive machining relationship with an electrically conductive workpiece across a machining gap defined between the end portion and the workpiece, and the electrode tool and the workpiece are relatively displaced generally translationally to advance said end portion effectively in the workpiece sequentially along successive two-dimensional feed paths programmed in respective sequential planes which are in mutually parallel relationship in a third dimensional direction or in the direction of the longitudinal axis of the electrode tool, while maintaining the electroerosive machining relationship between the advancing end portion and the workpiece to progressively develop in the latter a three-dimensional machined form corresponding to the cumulative effect of machining along said successive two-dimensional feed paths, the method comprising the steps of: while said electrode tool and end portion is advancing along each of said programmed two-dimensional paths in the corresponding plane,

(a) monitoring said machining gap to detect a defective condition therein and producing a control signal in response to said condition;

(b) in response to said control signal, retracting, from a position of said defective gap condition, said electrode tool and the workpiece relative to each other by a prescribed distance in a prescribed direction which is inclined to the axis of the electrode tool and substantially normal to a tangent plane to the developing three-dimensional form at said position and oblique to the respective two-dimensional path in progress; and

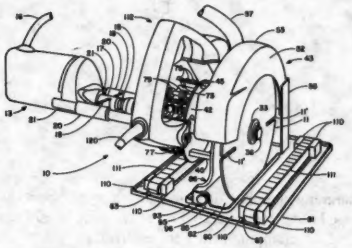
(c) returning said retracted electrode tool relative to said workpiece to restore said end portion to said position.

4,608,477

ELECTRIC ARC SAW APPARATUS

Paul R. Deichelbohrer, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,180
Int. Cl.[4] B23K *37/02;* B23D *45/16*
U.S. Cl. 219—69 V 7 Claims



1. A portable hand-held electric arc saw apparatus comprising: a frame, means for mounting a rotatable shaft on said frame, an electrically conducting blade rigidly secured to said shaft and engagable with a workpiece of opposite polarity for generating an electric arc therebetween, electrically conducting means mounted on said frame for transmitting current to said blade and including a slip ring secured to said shaft, a plurality of brushes mounted on said frame and having inner ends engaging the periphery of said slip ring, a handle mounted on said frame for facilitating handling and guidance of said blade relative to said workpiece, a base member mounted on said frame and having a slot therein for accommodating said blade, means for adjustably mounting said blade for varying the extent of blade projection past said base member, mobile means projecting through said member and engagable with said workpiece for facilitating movement of said apparatus relative to said workpiece, and means for electrically insulating said mobile means from said base member.

4,608,478

WIRE ELECTRODE CLAMPING MECHANISM OF WIRE-CUT ELECTRIC DISCHARGE MACHINE

Toshiyuki Aso, and Yasuo Arakawa, both of Hino, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP84/00417, § 371 Date Apr. 29, 1985, § 102(e) Date Apr. 29, 1985, PCT Pub. No. WO85/01000, PCT Pub. Date Mar. 14, 1985
PCT Filed Aug. 30, 1984, Ser. No. 732,042
Claims priority, application Japan, Aug. 31, 1983, 58-159370
Int. Cl.[4] B23H *7/10*
U.S. Cl. 219—69 W 4 Claims

1. A wire electrode clamping mechanism of a wire-cut electric discharge machine, the clamping mechanism being mounted on a wire electrode pull-up mechanism, which pulls a wire electrode up to a position of feed rollers disposed above a workpiece, for clamping the wire electrode delivered by a wire electrode feed mechanism disposed below said workpiece, the wire electrode clamping mechanism comprising:

a wire guide pipe for guiding said wire electrode;

a pipe holder for accommodating an upper portion of said

wire guide pipe in such a manner that said wire guide pipe is capable of moving up and down; and

a clamping member disposed on an upper portion of said pipe holder and operated by movement of said wire guide pipe for clamping said wire electrode.

4,608,479

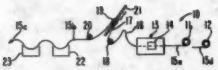
LEAD-FRAME SPLICER WELDER AND METHOD

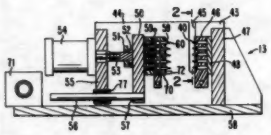
Hooshang Jahani, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 25, 1984, Ser. No. 634,501

Int. Cl.[4] B23K *11/10*

U.S. Cl. 219—87 **9 Claims**





1. A multiple spot welder comprising:

a base;

a slide means affixed to said base;

a first set of multiple electrodes fixedly connected to a first common bus bar and fixedly connected with respect to said base;

a second set of multiple electrodes fixedly connected to a second common bus bar;

a translating plate mounting said second set of electrodes and slidable with respect to said slide means; and

an actuator fixedly connected with respect to said base and including an actuator rod movable to move said translating plate along said slide means a distance sufficient to bring the second set of electrodes into aligned spaced juxtaposition with said first set of electrodes, each set of electrodes being in contact with opposite sides of a workpiece insertible in a gap between said sets of multiple electrodes.

4,608,480

PROCESS AND APPARATUS FOR LASER DRILLING

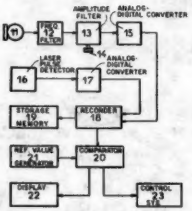
Henri Bizot, Paris; Géry-Charles J. Brasselet, Le Mee sur Seine; Jean-Paul Louis, Moissy Cramayel, and Georges Narcy, Melun, all of France, assignors to S.N.E.C.M.A., Evry, France

Filed Jun. 8, 1984, Ser. No. 618,811

Claims priority, application France, Jun. 15, 1983, 83 09858

Int. Cl.[4] B23K *26/00*

U.S. Cl. 219—121 LK **15 Claims**



1. A process for laser drilling a plurality of holes completely through a work piece comprising the steps of:

(a) directing a pulsed laser beam onto the work piece so as to form a hole extending completely through the work piece;

(b) placing an acoustic sensing means in proximity to, but not in contact with the work piece;

(c) acoustically sensing the audible sound generated by the melting of the work piece caused by the laser beam pulse and converting the acoustic signal into a first electrical signal proportional to the audible sound;

(d) passing the first electrical signal through a frequency filter to filter out those frequencies below a predetermined value;

(e) passing the first electrical signal through an amplitude filter;

(f) adjusting a threshold value of the amplitude filter such that, when the hole extends completely through the work piece and is properly sized, the amplitude of the first electrical signal is below the threshold value;

(g) converting the first electrical signal into digital form by assigning a value of 1 to each laser pulse electrical signal above the threshold amplitude and a value of 0 to those below the threshold amplitude;

(h) generating a second electrical signal for each pulse of the laser beam;

(i) converting the second electrical signal into digital form;

(j) placing the first and second electrical signals in phase with each other and generating a first input signal;

(k) generating a second input signal corresponding to the number of digital pulses above the threshold amplitude necessary to properly form the hole completely through the work piece;

(l) comparing the first input signal to the second input signal;

(m) generating an output signal based upon the comparison of the first and second input signals;

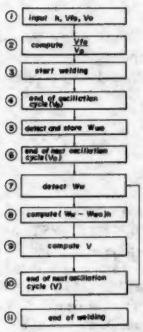
(n) displaying the output signal so as to indicate the quality of the hole being formed; and,

(o) controlling one of the operating parameters of the laser with the output signal.

4,608,481
METHOD OF AUTOMATICALLY CONTROLLING HEIGHT OF A WELD BEAD

Hirokazu Nomura; Yuji Sugitani, and Naohiro Tamaoki, all of Tsu, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,654
Claims priority, application Japan, May 28, 1984, 59-108150
Int. Cl.[4] B23K *9/12*
U.S. Cl. 219—125.12 3 Claims


① input h, Vfo, Vo
② compute Vfo/Vo
③ start welding
④ end of oscillation cycle (Ww)
⑤ detect and store Wwo
⑥ end of next oscillation cycle (Ww)
⑦ detect Ww
⑧ compute (Ww − Wwo)h
⑨ compute V
⑩ end of next oscillation cycle (V)
⑪ end of welding

1. In an arc welding method for effecting welding by reciprocatorily oscillating a welding electrode in a width direction within a groove of a pair of metals to be welded which comprises performing a control operation of varying a distance between a forward end of said electrode and a base metal surface by means for driving said welding electrode in an axial (Y-axis) direction so as to maintain a predetermined welding current or arc voltage and thereby always maintain an arc length constant, moving, simultaneously therewith, said electrode in a width (X-axis) direction of said groove and reversing the direction of said X-axis direction movement when said distance reaches a predetermined value, and thereafter repeating said operations such that the arc at said electrode forward end is caused to accurately follow said groove while being reprocatorily oscillated in the width direction within said groove and a height from said base metal surface or a root of said groove to each extremity of said reciprocating oscillation is always maintained uniform, a method of automatically controlling the height of a weld bead comprising the steps of:

detecting an oscillation width Wwo during a period of a preceding cycle of said oscillation and an oscillation width Ww during a period of a current cycle;

obtaining a welding speed V in accordance with said oscillation widths Wwo and Ww, a desired bead height h, a wire feed speed Vfo and a welding speed initial set value Vo

$$V = \frac{vfo}{\frac{Vfo}{Vo} + (Ww - Wwo)h};$$

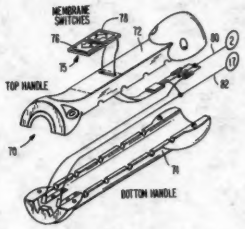
executing said welding speed V during the next oscillation cycle; and

repeating thereafter said operations.

4,608,482
CONTROL FOR WELDING SYSTEM

Ron Cox, 2208 Victoria Street, Windsor, Ontario, Canada, and Elzi Pettovello, 6326 Appoline Dr., Dearborn, Mich. 48126

Continuation-in-part of Ser. No. 581,151, Feb. 17, 1984, Pat. No. 4,510,373. This application Apr. 8, 1985, Ser. No. 720,847
Int. Cl.[4] B23K *9/10*
U.S. Cl. 219—132 20 Claims



9. A welding control system for use in an arc welding assembly, comprising:

a controllable welding power supply for supplying power to a welding electrode and to a variable drive means for advancing the welding electrode;

control means producing a control signal;

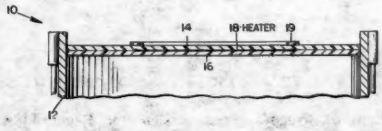
control circuit means including a mircoprocessor responsive to said control signal for continuously and selectively increasing or decreasing the power supplied to the welding electrode and for simultaneously and continuously adjusting the speed at which said variable drive means advances the electrode in accordance with a predetermined power/speed relationship; and

means for selecting one of a plurality of power/speed relationships whereby the power supplied to said electrode and the advancement speed of said electrode are adjustable by said control signal.

4,608,483
HEATER FOR A DRUM

Richard N. Arnold, 67 Shattuck St., Springfield, Mass. 01109-3065, and Haynie Harris, 515 Hancock St., Springfield, Mass. 01105

Filed Mar. 15, 1985, Ser. No. 712,417
Int. Cl.[4] H05B *3/26;* G10D *3/02*
U.S. Cl. 219—201 1 Claim

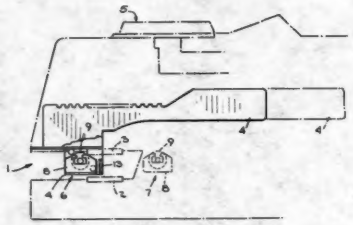


1. An electrically heated percussion drum comprising: a vertical annular wall, one end of the wall being closed by a pair of coplanar membranes secured at their adjacent circumferences to the annular wall, a heating element in the form of a wire loop disposed centrally and concentrically of and between the pair of membranes and a pair of terminals extending radially outwardly from each end of the wire loop and through the annular wall, a temperature control unit electrically connected to the outboard terminals of the heating element, and a conductor connecting the heating element and the temperature control unit to a source of electricity.

4,608,484
POSTAGE METER

Timothy R. Erwin, West Redding, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 14, 1985, Ser. No. 701,834
Int. Cl.[4] B41F *1/06*; G06F *1/106*
U.S. Cl. 235—101 **16 Claims**



1. A postage meter comprising a meter housing, an interior metering assembly and an inking station, said inking station comprising an inking means and synthetic constructed components adjacent said inking means, at least one of said components containing an ink capillary action block in the form of at least one groove, said at least one groove being located at a portion of a first component that is in face to face virtual contact with a second component, said at least one groove being of sufficient dimensions so as to prevent migration by capillary action of postage meter ink beyond its position in said component.

15. A method for preventing the capillary flow of ink through a space between at least two surfaces in virtual contact within a postage meter, the postage meter comprises a meter housing, an interior metering assembly and an inking station, the inking station including an inking means and synthetic constructed components adjacent the inking means, the components having at least two surfaces in virtual contact, the method comprising the step of providing in at least one of said surfaces at least one groove of sufficient dimensions so as to prevent migration by capillary action of said ink beyond said at least one groove in said surface.

4,608,485
AUTOMATIC TRANSFER TRANSACTION PROCESSING APPARATUS

Kenji Miura, Nagoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

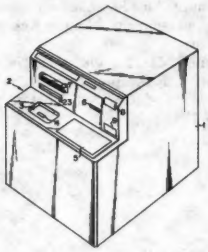
Filed Jul. 25, 1984, Ser. No. 634,266
Claims priority, application Japan, Jul. 25, 1983, 58-135414; Mar. 22, 1984, 59-53527
Int. Cl.[4] G06R *15/30*
U.S. Cl. 235—379 **6 Claims**

1. An automatic transfer transaction processing apparatus comprising:

input means for entering transfer information;

transfer transaction processing means for performing the transfer transaction process in accordance with the transfer information entered at said input means;

card-like medium issuing means for issuing a card-like medium having at least part of the transfer information entered at said input means when the transfer transaction process is finished; and

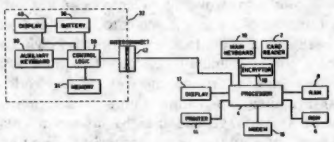


reading means for reading the card-like medium.

4,608,486
DATA ENTRY SYSTEM

Patrick Berstein, 209 Willowbrook Rd., Thornhill, Ontario, Canada (L3T 5L7); Jonathan Crinion, 325 Davenport Rd., Ste. 2, Toronto, Ontario, Canada (M5R 1K5); Robert J. Middlemiss, 3257 Chokecherry Crescent, Mississauga, Ontario, Canada (L5M 1B1), and Peter Oomen, 81 Irwin Crescent, Georgetown, Ontario, Canada L7G 1E7

Continuation-in-part of Ser. No. 455,044, Jan. 3, 1983, Pat. No. 4,532,416. This application Mar. 25, 1985, Ser. No. 715,620
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 **15 Claims**



1. A transaction terminal comprising a reader to read data from suitably encoded credit cards, a main keyboard, a main display for displaying information including data entered through the keyboard, a printer, a data processor receiving data from said reader and at least one keyboard, and a program memory containing selectable programs for operating said terminal in a plurality of modes in which it receives data from said credit card reader, wherein the terminal further includes a portable keyboard detachable from the remainder of the terminal and operable when detached to receive a data entry required as part of a transaction at a point remote from the remainder of the terminal and operable to transfer it to the processor independently of the main keyboard and display when reunited with the remainder of the terminal, wherein the portable keyboard unit comprises a memory, a power supply, control logic operative to store keyboard entries in the memory, and an interface to transfer data from the memory to the remainder of the terminal when the keyboard unit is united with the remainder of the terminal, and wherein the portable keyboard unit further includes means to engage a credit card so as to present an encoded portion of the card for reading by said reader, and the unit is united with the terminal for transfer of data when a card is so presented.

4,608,487

INPUT UNIT OF AN AUTOMATIC VENDING MACHINE

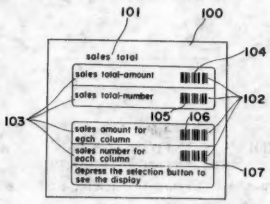
Misao Awane; Seiji Hara, and Satoshi Kobayashi, all of Kitaadachi, Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of, Japan

Filed Mar. 23, 1984, Ser. No. 592,410

Claims priority, application Japan, Mar. 31, 1983, 58-57611; Mar. 31, 1983, 58-57612; Apr. 6, 1983, 58-61117; Apr. 6, 1983, 58-61118; Apr. 6, 1983, 58-61120; Apr. 6, 1983, 58-61122

Int. Cl.[4] G06K *15/00*

U.S. Cl. 235—383 9 Claims



1. An input unit of an automatic vending machine comprising, in combination:

a bar sheet printed by given bar codes with selling prices to be set into an automatic vending machine;

a bar code reader of hand scanner type including a light emitting element adapted to sequentially apply its light on bars or spaces of said bar sheet through manual movement in accordance with the arrangement of the bars and spaces of said bar codes, and a photoelectric conversion element adapted to detect the light reflection amount from said light emitting element to output electric signals corresponding to the bar code;

means for converting the signals from said photoelectric conversion element into digital signals;

means for converting selling prices shown by said digital signals into codes recognizeable by the automatic vending machine; and

plurality of commodity selection switches corresponding to a plurality of selling columns, each of said commodity selection switches being adapted to select an applicable selling column for setting a sales price in a mode of said price setting.

4,608,488

DOCUMENT ISSUING APPARATUS

Nagayoshi Hirose, Tokyo; Sumiaki Kido, Yokohama, and Yoshiharu Fuzita, Ebina, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 15, 1983, Ser. No. 523,051

Claims priority, application Japan, Aug. 24, 1982, 57-146344

Int. Cl.[4] G07B *15/02*

U.S. Cl. 235—384 9 Claims

1. A commutation pass issuing apparatus comprising:

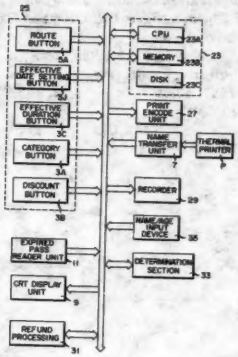
information reading means for reading information on a previously-issued commutation pass;

display means for displaying, from among the read-out information, every item necessary for issuing a new commutation pass;

changing means for changing those of the displayed items determined to need modification;

issuing means for issuing a new commutation pass in accordance with the changed items; and

control means for checking codes of the departure and destination stations printed in the previously-issued pass and controlling said changing means and issuing means in such a manner that a new pass is issued without any modification when the departure station is on the line of the pass issuing company and a new pass is issued with the



names of the departure, destination and way stations printed in the reverse order.

4,608,489

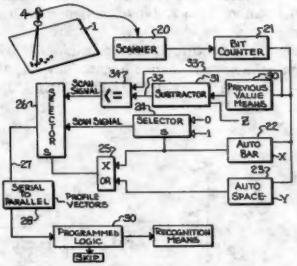
METHOD AND APPARATUS FOR DYNAMICALLY SEGMENTING A BAR CODE

David A. Ramsey; Clair F. Rohe, and Thomas E. Sawicki, all of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1984, Ser. No. 616,822

Int. Cl.[4] G06K *7/10*

U.S. Cl. 235—462 29 Claims



1. In a system for reading a two-dimensional bar code having bars located nominally at predetermined pitch increments, a method for processing bar image data comprising:

scanning the bar code at predetermined increments to produce scan lines of elements of image data of either a first or a second state to reflect either a bar image scan or a space image scan;

generating from the scan lines of image data a profile vector having elements representing the likelihood that each scan line of image data contains bar image data; and

transferring to recognition means only those scan lines of image data corresponding to generated profile vector elements meeting predetermined criteria representative of a bar image scan, and disregarding those scan lines of image data corresponding to generated profile vector elements not meeting the predetermined criteria.

4,608,490

FOCUS DETECTION METHOD UTILIZING SURFACE ACOUSTIC WAVE

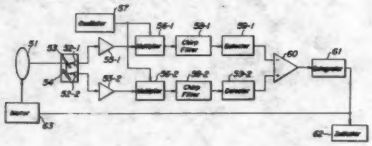
Tatsuo Nagasaki, Musashino, and Junichi Nakamura, Hachioji, both of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,426

Claims priority, application Japan, Nov. 22, 1982, 57-205026; Nov. 22, 1982, 57-205028; Nov. 22, 1982, 57-205029; Nov. 22, 1982, 57-205030

Int. Cl.[4] G01J *1/20*

U.S. Cl. 250—201 21 Claims



1. A method for detecting a focus condition of an imaging optical system comprising the steps of:

receiving at least a part of an image formed by an imaging optical system by means of at least one light receiving element array comprising a plurality of light receiving elements which produce element array output signals;

processing the element array output signals of said at least one light receiving element array in real time by means of at least one processing device including at least one surface acoustic wave device to produce a device output signal; and

detecting the focus condition of said imaging optical system from said device output signal.

4,608,491

ELECTRON BEAM INSTRUMENT

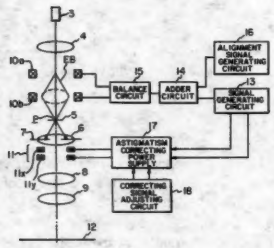
Yasushi Kokubo, Tokyo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,096

Claims priority, application Japan, Nov. 11, 1983, 58-212186

Int. Cl.[4] G01N *23/00;* H01J *3/26*

U.S. Cl. 250—311 2 Claims



1. In an electron beam instrument comprising a column that can be evacuated, said column having an electron gun at one end and an imaging means at the other end, said gun for emitting an electron beam along an optical axis extending through the imaging means, a specimen support means along the optical axis intermediate the gun and imaging means, electron lens means for condensing the electron beam and focussing it upon a specimen in a specimen support means, electron objective lens means near the specimen support means and projector lens means between the specimen and display means

deflecting means disposed between the gun and an objective lens;

means for supplying deflection signals to the deflecting means to permit the electron beam to fall on one point on a specimen on the specimen stage at a selected tilt angle while rotating the direction in which the electron beam is tilted;

lens means between the specimen and imaging means for correcting the astigmatism of the objective lens; and

means for supplying astigmatism correcting signals synchronized with the rotation of the direction of the tilt to said means for correcting the astigmatism.

4,608,492

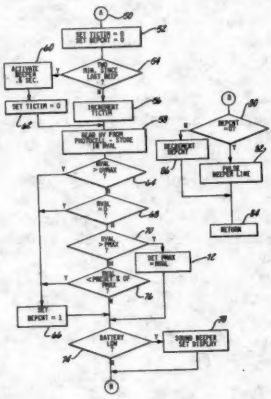
ULTRAVIOLET MONITOR SUNTAN ALARM WITH SELF TEST ROUTINES

Robert E. Burnham, Plymouth, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 496,062, May 19, 1983, Pat. No. 4,535,244. This application Apr. 9, 1984, Ser. No. 597,837

Int. Cl.[4] G01J *5/32*

U.S. Cl. 250—372 5 Claims



1 A photodosimeter comprising:

a housing having an opening,

electrical circuit means comprising means mounted beneath said opening for generating an output signal having a magnitude proportional to the intensity of ultraviolet radiation entering said housing opening,

means for repeatedly reading said output signals and for storing a cumulative value of said output signals,

means for determining and storing the maximum read value of said output signal,

an alarm,

means for activating said alarm when said cumulative value exceeds a preset value,

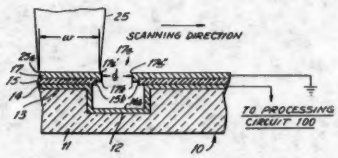
means for comparing a currently read output signal with the previously stored maximum read value of said output signal, and

means responsive to said comparing means for activating said alarm when said output signal is between ten and thirty five percent of the previously determined maximum read value of said output signal from said generating means.

4,608,493
FARADAY CUP

Yoshinori Hayafuji, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 9, 1983, Ser. No. 492,801
Int. Cl.[4] H01J 37/04
U.S. Cl. 250—397 8 Claims



1. A method of controlling the generation and focus of an electron beam of generally strip-shaped cross section by a gun which includes anode, cathode and grid electrodes and focusing means operable for providing a focusing field, comprising the steps of:

effecting a relative displacement of said electron beam across Faraday cup means, which has an opening with a maximum dimension less than the width of said strip-shaped cross section, in a direction transverse to the length of said strip-shaped cross section, so that said electron beam bombards said Faraday cup means through said opening;

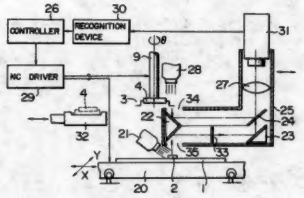
measuring the flow of current produced by said cup means in response to bombardment thereof by said electron beam; and

controlling at least one of said width and the current density and current distribution of said beam in accordance with said measured current flow.

4,608,494
COMPONENT ALIGNMENT APPARATUS

Mamoru Kobayashi; Hideaki Sasaki, both of Hadano, and Yasuhiko Hara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,437
Claims priority, application Japan, Nov. 11, 1983, 58-210870
Int. Cl.[4] G01M 11/00; G01N 21/64
U.S. Cl. 250—461.1 5 Claims



1. An apparatus for aligning an electronic component with a conductor pattern on a printed board adapted for mounting the electronic component thereon, said apparatus comprising:

first illuminating means for illuminating said printed board to excite a substrate thereof to emit a fluorescent light;

second illuminating means for projecting an illuminating light to leads of said electronic component positioned above said pattern;

a detection head for admitting an image of said board pattern formed by said fluorescent light and an image of said leads formed by said lead illuminating light, said detection head including a first and second opening arranged to respectively detect said board pattern image and said lead image, mirror means arranged to transmit said fluorescent light and reflect said lead illuminating light and thereby align optical axes of said board pattern image and said lead image with the same axis, relecting mirror means arranged to respectively lead said fluorescent light and said lead illuminating light from said first and second openings into said mirror means, said reflecting mirror means having a good reflectance characteristic with respect to its associated light, and filter means inserted in an optical path of said fluorescent light for mainly transmitting said fluorescent light;

means for photographing said board pattern image and said lead image detected by said detection head;

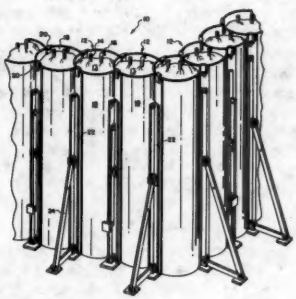
means for recognizing said photographed board pattern image and lead image and computing the amounts of deviation in position therebetween; and

means for correcting the position of said leads relative to said board pattern in accordance with said amounts of deviation.

4,608,495
COLLAPSIBLE RADIATION ATTENUATION SYSTEM

Earl B. Jacobson, 510 S. Share Dr., Crystal Lake, Ill. 60014

Filed Nov. 21, 1983, Ser. No. 553,820
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.[4] G21F 3/04
U.S. Cl. 250—517.1 28 Claims



1. A collapsible radiation attenuation system comprising:

a plurality of radiation attenuation module means, each adapted to be substantially filled with a radiation attenuating fluid when positioned where desired;

each of said module means including outer collapsible skin means, skin securing means and bladder means;

each of said module means including means shaped to conform with a substantial portion of the adjacent module means when assembled for substantially eliminating any direct radiation paths between assembled module means; and

each of said module means including assembly means adapted for securing said module means to one another in any desired alignment.

4,608,496
STRAND BREAK DETECTOR

Johnny Rosen, Höllviksnäs, Sweden, assignor to Trelleborg AB, Trelleborg, Sweden

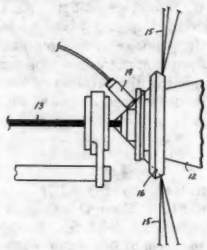
Filed Dec. 5, 1983, Ser. No. 558,185
Claims priority, application Sweden, Dec. 3, 1982, 8206907
Int. Cl.[4] G01N 21/89, 21/86
U.S. Cl. 250—561 8 Claims

1. Strand break detector for monitoring a number of longitudinally straightened strands extending along a number of pre-

determined paths to determine if a strand is broken or missing, comprising:

an optical transmitter with lightreceiving means disposed to provide relative movement between said transmitter and said strands with said movement in a direction generally transverse to said longitudinally straightened strands and said transmitter generating a signal for each strand passing said transmitter in a direction generally transverse to a longitudinal dimension of said strand;

an electronic circuit for receiving and processing the signal from the transmitter;



a shield arranged in front of the light-receiving means and forming an inlet for light to the light-receiving means; and

a slide surface on said shield disposed to engage in sliding contact strands approaching said inlet and guiding the strands engaging the slide surface past the light inlet as said transmitter and strands move relative to one another in a direction generally transverse to said longitudinally straightened strands with said slide surface disposed a distance from said light-receiving means to guide said strands past said inlet with strands separated from said light-receiving means by a preselected space.

4,608,497

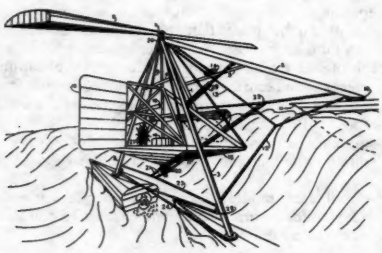
OCEAN WAVE ENERGY CONVERTING VESSEL

Peter F. Boyce, Delsea Dr., Delmont, N.J. 08314

Filed Apr. 3, 1985, Ser. No. 719,524

Int. Cl.[4] F03B *13/10, 13/12;* H02P *9/04*

U.S. Cl. 290—53 **5 Claims**



1. An ocean wave energy conversion system comprised of a four beam quadrapod supported by bouyant members from which is suspended a pendulum, said pendulum containing a vertical generator shaft and a generator, said generator shaft being splined and fitted with two racheted pulleys, said pulleys being looped, one clockwise and one counterclockwise with separate cables, said cables being attached at their ends to the bow and stern of the quadrapod, whereby said generator shaft will spin when the quadrapod rocks over waves and the pendulum tends towards the center of earth.

4,608,498

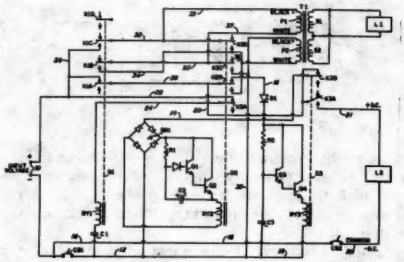
LOAD CONTROL CIRCUIT WITH DIFFERENT INPUT VOLTAGES

Lorenzo Falzarano, Belmont, and Carl Hewson, Marshfield, both of Mass., assignors to Brunswick Mfg. Co., North Quincy, Mass.

Filed Mar. 27, 1984, Ser. No. 593,865

Int. Cl.[4] H02M *1/10*

U.S. Cl. 307—22 **6 Claims**



1. A control circuit controlling operation of a DC load and comprising;

input terminal means that receive any one of a plurality of different input voltage signals including AC or DC signals,

control circuit means controlling operation of said DC load from said input voltage signal and including first means responsive only to said input DC voltage signal to control said load, second means responsive only to said input AC voltage signal for controlling said load,

said first means comprising a first electrical energizing means and said second means comprising a second electrical energizing means,

a transformer and means coupling the transformer to the input terminal means,

a rectifier coupled between the transformer and load,

means responsive to application of a DC input signal to energize said first electrical energizing means only to in turn energize said DC load directly,

and means responsive to application of an AC input signal to energize said second electrical energizing means only to in turn couple the AC signal via the transformer and rectifier to the DC load,

said means responsive to application of the DC and AC input signals being operated on a mutually exclusive basis,

said second means including one and another electrical energizing means, said one thereof having a delay means at the input thereof,

said one and another electrical energizing means being operated at different AC voltages.

4,608,499

POWER SYSTEM AND POWER GENERATION METHOD

Soren Rathmann, Horsens, Denmark, assignor to Silcon Elektronik A/S, Kolding, Denmark

Filed Feb. 1, 1984, Ser. No. 576,043

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1983, 3303223

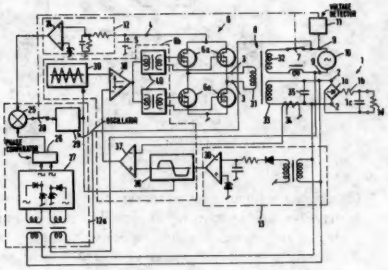
Int. Cl.[4] H02J *9/00*

U.S. Cl. 307—66 **39 Claims**

29. A power generating method comprising the steps of:

(a) generating an a-c output voltage having an at least approximately trapezoidal wave form, said wave form having a finite slope at substantially all absolute values of said output voltage smaller than the maximum amplitude of said wave form, and the absolute values of said slope at

substantially all absolute values of said output voltage other than said maximum amplitude being at least equal to the corresponding absolute values of the slope of a sinusoidal curve having the same maximum amplitude and period as said wave form, the generating step comprising maintaining a substantially constant mean value of said output voltage, and the generating step including forming a sinusoidal wave, clipping each half wave having an amplitude greater than a predetermined amplitude at said predetermined amplitude, and superimposing the clipped sinusoidal wave with the wave form of the output current corresponding to said output voltage to generate a control signal;



(b) rectifying said output voltage to obtain a d-c voltage; and

(c) developing power with said d-c voltage.

4,608,500

ELECTRIC POWER UNIT

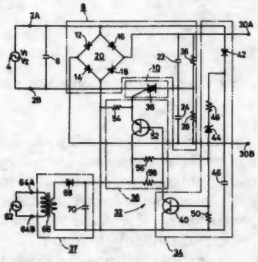
Jiro Togawa, Tokyo, Japan, assignor to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Jul. 12, 1984, Ser. No. 630,052

Claims priority, application Japan, Jul. 27, 1983, 58-117618[U]

Int. Cl.⁴ H02M *7/19*

U.S. Cl. 307—72 **6 Claims**



5. An electric power unit comprising:

a bridge rectifier circuit having first and second input terminals coupled to a first AC source, output terminals of said bridge rectifier circuit being coupled to corresponding first and second output terminals;

a first capacitor having a first terminal coupled to said first output terminal;

a second capacitor having a first terminal coupled to a second terminal of said first capacitor and a second terminal coupled to said second output terminal;

a first resistor having a first terminal coupled to said first output terminal;

a second resistor having a first terminal coupled to a second terminal of said first resistor and a second terminal of said first capacitor and a second terminal coupled to said second output terminal;

a triode AC switch having a first main terminal coupled to said second input terminal and a second main terminal coupled to said second terminal of said first capacitor;

a first transistor having an emitter coupled to a control terminal of said triode AC switch;

a third resistor having a first terminal coupled to said second input terminal and a second terminal coupled to said emitter of said first transistor;

a fourth resistor coupled between a base and a collector of said first transistor;

a second transistor having a collector coupled to said base of said first transistor;

a fifth resistor coupled between said collector of said first transistor and a base of said second transistor;

a sixth resistor coupled between a base and an emitter of said second transistor;

a Zener diode having an anode coupled to said base of said second transistor;

a seventh resistor having a first terminal coupled to a cathode of said Zener diode;

a diode having an anode coupled to said first input terminal and a cathode coupled to a second terminal of said seventh resistor;

a third capacitor coupled between said cathode of said diode and said emitter of said second transistor; and

a DC power supply for providing a DC voltage between said collector of said first transistor and said emitter of said second transistor.

4,608,501

TRIPPING APPARATUS FOR AN OCCUPANT PROTECTION APPARATUS IN VEHICLES

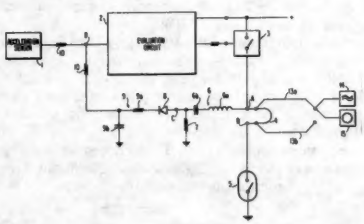
Rudolf Andres, Sindelfingen; Hansjürgen Scholz, Waldenbuch; Heinz W. Knoll, Stuttgart; Luigi Brambilla, Boeblingen; Volker Petri, Aidlingen, and Alban Bossenmaier, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 9, 1985, Ser. No. 689,850

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400533

Int. Cl.⁴ B62D *45/00*; B60R *21/02*

U.S. Cl. 307—105 B **3 Claims**



1. A tripping apparatus in vehicles, particularly for an occupant protection apparatus in impact restraining systems, having an acceleration sensor, an evaluation circuit and a switching stage serially connected as input to a tripping element in series with an acceleration switch comprising

a test circuit comprising

a series arrangement of a filter tuned to a predetermined frequency, a rectifier and an integrator, and

an input circuit means comprising a test generator for introducing to the series arrangement, a test signal comprising an alternating voltage having said predetermined frequency,

the input circuit means being connected to a predetermined point of zero potential in the inactive condition, said point

being located between the switching stage and the tripping element, and

an output means of the test circuit connected to the input of the evaluation circuit, for producing an answering signal at the output of the test circuit.

4,608,502

I^2L GATE CIRCUIT ARRANGEMENT HAVING A SWITCHABLE CURRENT SOURCE

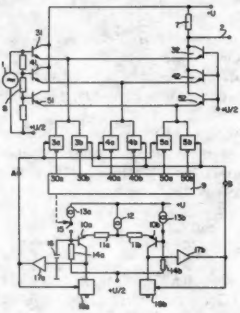
Eise C. Dijkmans, Eindhoven, Netherlands; Wilhelm Graffenberger, and Ernst A. Kilian, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,199

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222607

Int. Cl.[4] H03K *17/56, 19/088*

U.S. Cl. 307—243 **6 Claims**



1. A circuit arrangement comprising a plurality of signal paths which are formed by active circuits and by means of which signals of different levels are applied to a common output, each signal path being activatable by a switchable current source, characterized in that:

(a) each current source is formed by at least one I^2L gate (*3a* to *5b*);

(b) the I^2L gates are divided between a first group and a second group, the injector connections of the first group being connected to a first junction point (A) while the injector connections of the second group are connected to a second junction point (B);

(c) the control inputs of the I^2L gates (*3a* to *5b*) are driven so that when a switch-over occurs from one signal path to another signal path, two I^2L gates, each of which is associated with one of the signal paths and with one of the groups (for example, *3b, 4a*), can conduct current at least during a transition phase; and

(d) the junction points (A, B) are chosen so that the output currents of the two I^2L gates vary continuously and in the opposite sense during the transition phase.

4,608,503

APPARATUS FOR DRIVING FIRST AND SECOND DEVICES

Thomas H. Wong, Sunnyvale, and John W. Chu, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 25, 1982, Ser. No. 436,762

Int. Cl.[4] H03K *3/01, 17/86*

U.S. Cl. 307—270 **9 Claims**

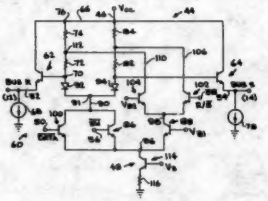
1. An apparatus for controlling a first device and a second device, comprising:

(a) a voltage input;

(b) a current source;

(c) a single data input for receiving an input signal; and

(d) means coupled between and powered by said voltage input and said current source for selectively driving the input signal at the first device or the second device, said selectively driving means having a first driver with a first output connectable to the first device, a second driver with a second output connectable to the second device;



(e) means for turning on either said first driver or said second driver whereby the input signal drives either the first device or second device, respectively; and

(f) means for disabling said first driver and said second driver.

4,608,504

INTERFACE CIRCUIT FOR INTERCONNECTING PERIPHERALS TO AN INFORMATION PROCESSING DEVICE

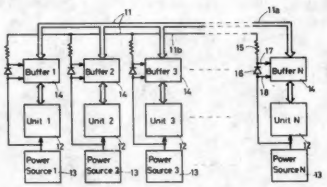
Hidehiko Yamamoto, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 28, 1983, Ser. No. 479,433

Claims priority, application Japan, Jan. 20, 1983, 58-8121

Int. Cl.[4] G06F *11/20*

U.S. Cl. 307—442 **3 Claims**



1. An interface circuit for an information processing system comprising:

a data buss;

a plurality of information processing units;

a plurality of buffer circuits, each connecting an associated one of said information processing units to said data buss;

a plurality of power sources, each associated with and supplying power to one of said information processing units and its associated said buffer circuit;

a common power supply line interconnecting all of said plurality of power sources, said power supply line bidirectionally supplying power from any one of said plurality of power sources to all of said buffer circuits;

a plurality of buffer enable means, each associated with a said buffer circuit, for monitoring the associated said power source and enabling said buffer to transfer information between said data buss and said associated information processing unit when said associated power source is supplying power thereto;

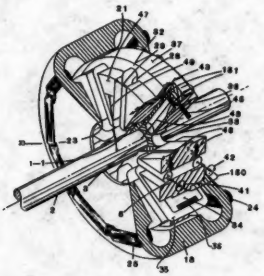
each said buffer circuit being thereby disabled when adequate power is not supplied to its said associated information processing unit by the associated said power source while remaining powered to thereby develop a high input impedance.

4,608,505

COMMUTATORLESS D.C. ELECTRIC MOTOR

Larry Schumacher, 18876 Tenderfoot Trail, Newhall, Calif. 91321

Filed Dec. 17, 1984, Ser. No. 682,890
Int. Cl.[4] H02K *1/26*
U.S. Cl. 310—267 25 Claims



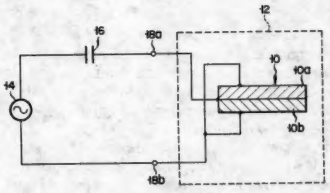
1. An electromotive apparatus comprising:
a case;
a rotatable motor shaft mounted in said case;
annular cylindrical armature means having planar sides;
annular magnetic field means circumjacent said cylindrical armature;
mounting means mounting said annular cylindrical armature means and said annular magnetic field means in said case so that one is rotatable on said motor shaft relative to the other;
said annular cylindrical armature means being constructed to have a plurality of axially planar substantially equally spaced radial extending slots;
a plurality of substantially non-magnetic cores, said non-magnetic cores being wound with wire and secured in said armature radial extending slots between said planar sides of said annular cylindrical armature;
said cores and windings having a length less than the axial length of said armature means so that said armature means extends beyond each wound core, a portion of said armature having radial extending slots adjacent to each of said cores and windings being wider than the thickness of said wound cores on either planar side of said armature means.

4,608,506

TEMPERATURE COMPENSATED DRIVE FOR A PIEZOELECTRIC DISPLACEMENT GENERATOR

Chiaki Tanuma, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 22, 1984, Ser. No. 592,542
Claims priority, application Japan, Mar. 31, 1983, 58-53772
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—315 14 Claims



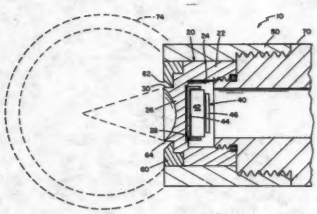
1. A device for generating periodical displacement to swing or vibrate a solid-state image sensor, said device comprising:
(a) a piezoelectric element adapted to be mechanically coupled to said image sensor and having an electrostatic capacitance with a predetermined temperature coefficient, said piezoelectric element receiving an AC drive voltage to generate, in response to the AC drive voltage, the periodical displacement which causes said image sensor to swing or vibrate continuously during its image sensing operation; and
(b) capacitor means, electrically connected in series with said piezoelectric element and having an electrostatic capacitance with a temperature coefficient whose sign is opposite to that of the predetermined temperature coefficient, and whose value is selected such that the AC drive voltage applied to said piezoelectric element when the electrostatic capacitance of said piezoelectric element changes with a change in ambient temperature compensates for a change in the vibration amplitude of the swinging image sensor caused by the change in ambient temperature, whereby said image sensor is allowed to swing at a uniform vibration amplitude irrespective of the ambient temperature.

4,608,507

DAMPING DEVICE FOR FOCUSED PIEZOELECTRIC TRANSDUCER

Werner G. Neubauer, Annandale, Va., and Jon J. Mingo, Providence, R.I., assignors to Micro Pure Systems, Inc., Warwick, R.I.

Filed Jun. 29, 1984, Ser. No. 626,452
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—335 5 Claims



1. An ultrasonic detection apparatus comprising:
a transducer for generating ultrasonic signals,
a lens unit having a lens,
said lens having a sidewall, said lens being arranged to focus the ultrasonic signals from said transducer, and
a damping ring,
said damping ring being adjacent to said lens unit and angled away from said lens sidwall forming a small opening therebetween, wherein stray noise or energy in sid lens unit enters said damping ring rather than returning to said transducer.

4,608,508

PIEZOELECTRIC IGNITER, ESPECIALLY FOR A CIGARETTE LIGHTER OR THE LIKE

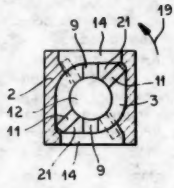
Taiji Ohnishi, Himeji, Japan, assignor to Intermatch S.A., Nyon, Switzerland and K.K. Piem Riken, Himeji, Japan

Filed Aug. 29, 1984, Ser. No. 645,603
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—339 6 Claims

1. A piezoelectric igniter comprising:
a sleeve formed with a pair of peripherally closed windows at opposite sides thereof and having a noncircular generally oval internal cross section having arcuate portions, said internal cross section having a major transverse dimension;
a casing shiftable relative to said sleeve and having an interior portion of noncircular outer cross section comple-

mentary to that of said sleeve and received therein, said casing being formed with a pair of diametrically opposite slots open at respective ends within said sleeve and provided adjacent said ends with respective notches;

at least one compression spring received in said sleeve; a hammer formed unitarily with a pair of diametrically opposite lugs projecting through said windows and biased by said spring toward said casing, said lugs being guided in said slots and engageable in said notches; and



a piezoelectric assembly disposed in said casing adapted to be impacted by said hammer upon release of said lugs from said notches by camming rotation of said hammer relative to said casing and said sleeve by an inclined edge of at least one of said windows, a further inclined edge of one of said windows camming said lugs into said notches, said major dimension being greater than the free end spacing of said lugs which is less than the distance between internal surfaces of said sleeve formed with said windows.

4,608,509

LENGTH POLARIZED, END ELECTRODED PIEZOELECTRIC RESONATOR

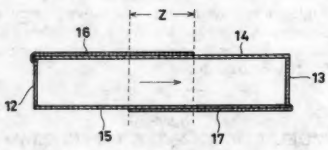
Takashi Yamamoto, Ro 118, Azayamazaki, Oshimizu-machi, Hakui-gun, Ishikawa, Japan (929-13); Houdo Kitajima, 5-3 Hakkin-cho, Takaoka-shi, Toyama, Japan (933), and Hiroyuki Takahashi, 8-40 Fushikikofu 3-chome, Takaoka-shi, Toyama, Japan (933-01)

Filed Nov. 27, 1984, Ser. No. 675,394

Claims priority, application Japan, Dec. 8, 1983, 58-232496

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—357 **12 Claims**



1. A piezoelectric resonator which uses the longitudinal vibration mode, comprising:

a piezoelectric body polarized in a polarization direction, said piezoelectric body having lengthwise extending surfaces extending in said polarization direction between opposite ends, and opposite end surfaces at said opposite ends,

exciting electrodes formed on said opposite end surfaces,

insulating layers formed on at least portions of said lengthwise extending surfaces, and

a pair of take-out electrodes covering at least portions of said insulating layers and connected to said exciting electrodes.

4,608,510

PIEZOELECTRIC MICRO-RESONATEUR

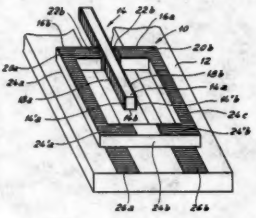
Rudolf J. Dinger, and Jean-Georges Michel, both of Neuchatel, Switzerland, assignors to Asulab S.A. - ESA 55, Switzerland

Filed Jan. 13, 1982, Ser. No. 339,152

Claims priority, application Switzerland, Jan. 15, 1981, 234/81

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—361 **5 Claims**



1. A micro-resonator for vibrating in a main extension-compression mode, comprising a Z cut bar; and an integrated suspension assembly for said Z cut bar formed integral with said bar, said bar and suspension assembly being chemically cut from the same plate of piezoelectric material, said bar having a length, a width and a thickness respectively disposed substantially parallel to the Y, X and Z axes of said piezoelectric material, the width of the bar being smaller than the thickness of the bar; an electrode disposed on each side of said bar which extends parallel to the bar length and thickness, for exciting the vibration of the bar; and conducting connections provided on said suspension assembly and electrically connected to the electrodes.

4,608,511

ENERGY FILTER FOR A GEIGER-MüLLER TUBE

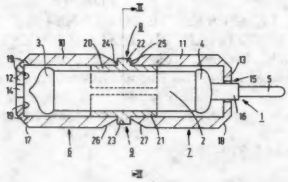
David Barclay, South Croydon, and Peter H. Burgess, Wantage, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 12, 1984, Ser. No. 570,116

Claims priority, application United Kingdom, Jan. 17, 1983, 8301155

Int. Cl.⁴ H01J *47/06, 5/18*

U.S. Cl. 313—93 **19 Claims**



1. A γ-ray energy filter for an elongated Geiger-Müller tube having a longitudinal axis, said filter comprising

two filter bodies each having an annular portion for coaxially surrounding the Geiger-Müller tube, said two filter bodies substantially absorbing γ-ray energy within a range of energies to be detected,

wherein said two filter bodies are spaced by a longitudinal gap from one another in the longitudinal direction to permit said rays to be in cident on part of said Geiger-Müller tube without substantial absorbtion, said annular portions of said two filter bodies extending in said longitudinal direction from said longitudinal gap,

said annular portions having surfaces at said longitudinal gaps extending away from one another in the same radial

sense at an angle to said longitudinal axis of less than 45° over a portion of the radial thickness of said annular portions,

wherein at least one of said filter bodies has a plurality of circumferentially spaced apertures extending through said at least one filter body, each of said plurality of apertures having an axis disposed at an inclination to said longitudinal axis at an angle differing from 0° and from 90°, and

wherein said two filter bodies are of an alloy consisting essentially of tin and lead with the proportion of lead being less than 95% but not substantially less than 40%.

4,608,512

LAMP AND REFLECTOR COMBINATION, PARTICULARLY FOR PROJECTORS

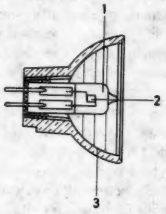
Peter Rakitsch, Ismaning, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Fed. Rep. of Germany

Continuation of Ser. No. 435,238, Oct. 19, 1982, abandoned. This application Jul. 18, 1985, Ser. No. 755,979

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143776

Int. Cl.⁴ H01K *1/50, 1/26*

U.S. Cl. 313—113 **10 Claims**



1. A lamp bulb and reflector combination for projectors, to project a beam of light on a film window of predetermined size, in a film window plane, having

a light source or bulb (1) with a filament (2);

and a generally ellipsoid-shaped reflector having a reflective surface which is substantially symmetrical about a central axis or centerline (CL) and is positioned to surround the light source, to reflect light therefrom and form said beam, wherein

the reflective surface (3) has a cross-sectional profile (P), in any selected plane incorporating said centerline (CL), which is not a continuous curve, but rather is formed of a sequence of surface or areal segments (F) having a common central axis or centerline (CL), each segment being in the form of a, circumferentially continuous truncated cone-shaped shell,

the reflective surfaces of the truncated cone-shaped shells formed by said segments each having in said cross-sectional profile, respectively, a different angle with respect to the axis or centerline (CL) of the reflector;

wherein each of the areal segments has, in cross section, a length (l), between points (A, B, C, D, E) along said profile where said segment meets adjacent segments, which is so dimensioned that the overall length of images of the projected filament (2) of the lamp in the plane of a film window perpendicular to said centerline (CL) is equal to or larger than the diagonal of the image field,

and wherein adjacent areal segments intersect, in the discontinuous reflector profile, in intersection circles which lie on a curve (K) forming a theoretical continuous reflector profile.

4,608,513

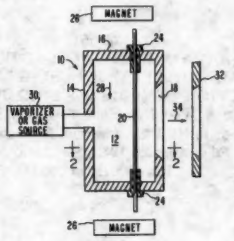
DUAL FILAMENT ION SOURCE WITH IMPROVED BEAM CHARACTERISTICS

William B. Thompson, Rockport, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 13, 1984, Ser. No. 650,014

Int. Cl.⁴ H05H *00/00*

U.S. Cl. 313—359.1 **4 Claims**



1. An ion source comprising:

a housing which defines an internal arc chamber and includes an extraction slit for extraction of an ion beam;

at least two filament electrodes for thermionic emission of electrons positioned in said arc chamber;

means for supplying electrical current through said filament electrodes for heating thereof in opposite directions such that, in the region of said extraction slit, the net magnetic field produced by said electrodes in a direction transverse to said ion beam is approximately zero;

means for biasing said housing at a more positive potential than said filament electrodes;

means for imposing a magnetic field on said arc chamber generally parallel to said filament electrodes; and

means for introducing an ionizable material into said arc chamber.

4,608,514

PHOTOCONDUCTIVE TARGET OF THE IMAGE PICKUP TUBE

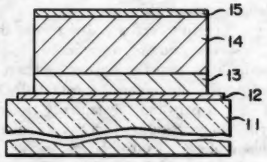
Takao Kuwahata, Tokyo; Sohei Manabe, and Katsuhiro Gonpei, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 23, 1985, Ser. No. 726,316

Claims priority, application Japan, Apr. 25, 1984, 59-81984

Int. Cl.⁴ H01J *31/38*

U.S. Cl. 313—386 **10 Claims**



1. A photoconductive target of an image pickup tube, comprising a transparent substrate, a transparent conductive layer formed on said transparent substrate, a photoconductive layer formed on said transparent conductive layer and containing cadmium, tellurium and selenium as major components, and a high resistance layer formed on said photoconductive layer, wherein the film thickness of said photoconductive layer is more than 1,000 Å and less than 10,000 Å and a film thickness

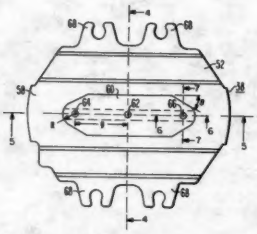
of said high resistance layer falls within the range between 2 and 10 μm.

4,608,515

CATHODE-RAY TUBE HAVING A SCREEN GRID WITH ASYMMETRIC BEAM FOCUSING MEANS AND REFRACTION LENS MEANS FORMED THEREIN

Hsing-Yao Chen, West Hempfield Township, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 30, 1985, Ser. No. 729,163
Int. Cl.⁴ H01J *29/51*
U.S. Cl. 313—412 **5 Claims**



1. In a cathode-ray tube comprising an image screen and an inline electron gun for projecting three electron beams including a center beam and two outer beams along beam paths onto said screen, said gun comprising:

three cathodes for generating the electron beams,

a control grid, a screen grid, and a main electron lens arranged successively in alignment with said cathods for focusing said electron beams, said control grid, said screen grid, and said main electron lens each having three spaced-apart, aligned apertures comprising a center aperture and two outer apertures disposed in a plane for passing the electron beams, said screen grid having a functional grid region including the screen grid apertures, asymmetric beam focusing means for reducing flare distortion, and refraction lens means, the improvement wherein

said asymmetric beam focusing means comprises a transversely disposed rectangularly-shaped slot, said slot having a length greater than the spacing between the outer screen grid apertures and a width greater than the diameter of the screen grid apertures, and

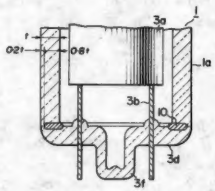
said refraction lens means comprises a transversely disposed recessed portion including a substantially rectangularly-shaped central part and substantially triangularly-shaped end parts, said recessed portion having a length, extending in the plane of said electron beams, substantially coextensive with the length of said slot, and a width, extending substantially orthogonal to said plane of said electron beams, substantially greater than the width of said slot, said recessed portion being surrounded by a peripheral rim which conforms to the shape of said recessed portion, the central part of said peripheral rim being remote from said center aperture and the triangularly-shaped end parts of said rim being in proximity to said outer apertures, thereby affecting the electrostatic field in the vicinity of the outer beam paths by tilting the field lines within said recessed portion.

4,608,516

ELECTRON TUBE HAVING GLASS-TO-METAL-TO-GLASS SEAL

Hiroshi Oki, Chiba, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,448
Claims priority, application Japan, Mar. 12, 1980, 58-30379
Int. Cl.⁴ H01J *5/22, 29/90*
U.S. Cl. 313—477 R **2 Claims**



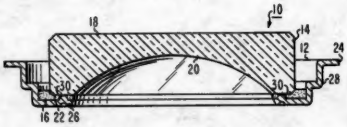
1. An electron tube comprising an envelope of glass material having its end open, and a stem of glass material having an electron gun assembly mounted thereon and a periphery portion sealed to said open end of said envelope, said electron gun assembly being accomodated within said envelope, wherein said open end of said envelope and said periphery portion of said stem are sealed to each other through a metallic ring member which is made of a metallic material having a thermal expansion coefficient close to the glass materials of said envelope and said stem, a portion of said metallic ring member between said open end of said envelope and said periphery end of said stem being coated with a layer of a low melting glass which is made of a glass material which is different from the glass materials of said envelope and said stem, the outer diameter of said metallic ring member being smaller than the outer diameter of a portion of said envelope in the vicinity of the sealed interface between said envelope and said stem, said metallic ring member including a cylindrical portion extending along the inner wall of said envelope and exposed in said envelope, said cylindrical portion of said metallic ring member being stepped.

4,608,517

FACEPLATE ASSEMBLY HAVING INTEGRAL GAUGING MEANS

David D. Neuer, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 28, 1984, Ser. No. 625,804
Int. Cl.⁴ H01J *29/02, 40/02, 1/34*
U.S. Cl. 313—477 R **3 Claims**



1. In a faceplate assembly including a faceplate flange having a sealing surface, a faceplate member having a substantially flat sealing portion, and sealing means for sealing said faceplate member to said faceplate flange, the improvement comprising

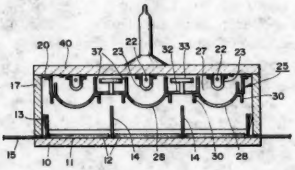
gauging means integral with said sealing surface of said faceplate flange and in contact with said substantially flat sealing portion of said faceplate member, said gauging means forming a plane substantially parallel to said sealing surface of said faceplate flange, whereby said faceplate member is sealed parallel to said faceplate flange and at a predetermined distance therefrom.

4,608,518

COLOR FLUORESCENT LUMINOUS TUBE

Tatsuo Fukuda, and Akiyoshi Ikenaga, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K. K., Mobara, Japan

Filed May 28, 1985, Ser. No. 738,350
Claims priority, application Japan, May 28, 1984, 59-108092
Int. Cl.[4] H01J 29/94
U.S. Cl. 313—481 18 Claims



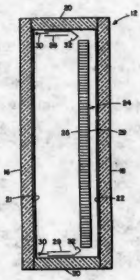
1. A color fluorescent luminous tube comprising:
a display plate;
an anode arranged on said display plate;
a plurality of luminous cells deposited on said anode, said luminous cells emitting different luminous colors from one another upon impingement of electrons thereupon;
a cathode filament stretched above each of said luminous cells to be opposite thereto;
a control grid arranged between each of said cathode filaments and said luminous cells;
a shield grid holder mounted between said control grids and said luminous cells, said shield grid holder being provided with windows and openings;
a shield grid mounted on each of said windows to be opposite to said luminous cell, control grid and cathode filament; and
a getter means for diffusing a getter material to form a getter film within said luminous tube, said getter means being arranged adjacent to each of said openings and lain in a plane substantially parallel to said cathode filament.

4,608,519

MIDDLE-INFRARED IMAGE INTENSIFIER

Christopher H. Tosswill, Sturbridge, Mass., assignor to Galileo Electro-Optics Corp., Sturbridge, Mass.

Filed Apr. 5, 1984, Ser. No. 596,935
Int. Cl.[4] H01J 43/06
U.S. Cl. 313—528 8 Claims



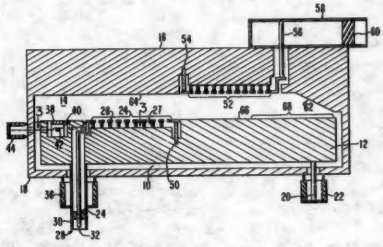
1. A middle-infrared image intensifier comprising
an image-forming microchannel plate having an input face for receiving a middle-infrared radiation image and an output face, said plate carrying, at entrances to channels of said microchannel plate at said input face, a photoconductor material that is activated by middle-infrared radiation incident on said input face,
an electron generator for flooding slow electrons to a region adjacent to said input face of said photoconductor,
an electron-sensitive light-emitting screen positioned to receive electrons from said output face of said microchannel plate, and
activating means for activating said microchannel plate to provide electrons to, and multiply electrons in, channels of said microchannel plate at which middle-infrared radiation is incident on photoconductor material at entrances thereof, to thereby provide a visible image on said screen of said middle-infrared radiation image.

4,608,520

CATHODE DRIVEN CROSSED-FIELD AMPLIFIER

Hunter L. McDowell, Concord, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 29, 1983, Ser. No. 518,719
Int. Cl.[4] H01J 25/34
U.S. Cl. 315—39.3 10 Claims



1. A crossed-field amplifier tube comprising:
an extended cathode, at least a section of an interaction surface being part of a wave-transmissive cathode slow-wave circuit, said wave-transmissive portion having a secondary emission ratio greater than unity,
means for coupling an input transmission line to an input end of said cathode slow-wave circuit,
an extended anode having an interaction surface facing said cathode interaction surface and spaced therefrom, at least a section of said anode interaction surface being part of a wave-transmissive anode slow-wave circuit,
at least a portion of said anode slow-wave circuit extending beyond said cathode slow-wave circuit in a direction of drift and at least a portion of said cathode slow-wave circuit extending beyond said anode slow-wave circuit in a direction opposite said drift,
means for coupling an output end of said anode slow-wave circuit to an output transmission line,
said cathode and anode being adapted for applying a DC electric field between said anode and said cathode and a DC magnetic field parallel to said interaction surfaces and perpendicular to their longitudinal extent,
said slow-wave circuits being adapted to transmit waves in the direction of drift of electrons in said DC fields.

4,608,521

DUAL SPIRAL LINE GENERATOR METHOD AND APPARATUS FOR STARTING LOW WATTAGE HIGH INTENSITY DISCHARGE LAMPS

Charles N. Fallier, Jr., Westford, and Joseph M. Proud, Wellesley Hills, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 27, 1984, Ser. No. 686,974
Int. Cl.[4] H01J 7/44, 13/46, 17/34, 19/78
U.S. Cl. 315—47 4 Claims

1. A light source comprising:
(a) a high intensity discharge lamp including a discharge

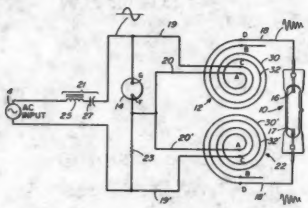
tube having electrodes sealed therein at opposite ends and an envelope enclosing a fill material which emits light during discharge;

(b) a ballast means for providing an output voltage equal to or substantially greater than the voltage into said ballast means, adapted to be conductively coupled to a source of AC voltage;

(c) a spark gap switch having first and second electrodes and a resistor coupled in series across the output terminals of said ballast means such that the first electrode of the spark gap means is conductively coupled to an output terminal of said ballast means;

(d) a starting circuit including:

(i) first and second spiral line pulse generators each including two conductors insulated from each other and formed together in a spiral configuration having a plurality of turns;



(ii) said first spiral line pulse generator having a first one of said conductors conductively coupled at a first end to the second electrode of said spark gap and a second end left non-conductively coupled, and the second one of said conductors having a first end conductively coupled to the first electrode of said spark gap, and a second end conductively coupled to a first one of the electrodes of the discharge lamp;

(iii) said second spiral line pulse generator having a first one of said conductors conductively coupled at a first end to the second electrode of said spark gap and at a second end left non-conductively coupled, and the second one of said conductors having a first end conductively coupled to a side of said resistor remote from the second electrode of the spark gap and a second end conductively coupled to a second one of the electrodes of the discharge lamp.

4,608,522

ELECTRONIC FLASH DEVICE

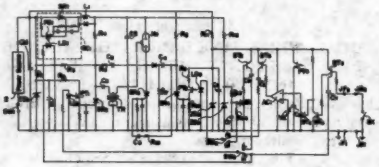
Yoshio Yuasa, Osaka; Kazuhiko Naruse, Nabari, and Masahito Inaba, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 5, 1983, Ser. No. 511,509

Claims priority, application Japan, Jul. 6, 1982, 57-118243; Sep. 18, 1982, 57-162831

Int. Cl.⁴ H05B *41/32, 41/34*

U.S. Cl. 315—241 P **8 Claims**



1. An electronic flash device comprising:

a power source circuit for generating a high voltage;

a main capacitor connected with said power source circuit to be charged by the high voltage;

an auxiliary capacitor having a smaller capacity than said main capacitor;

a flash tube coupled with said main and auxiliary capacitors to be energized by the both;

a series connected switch element and inductance element connected in the electrical path through which the auxiliary capacitor is charged by said main capacitor and the main capacitor energizes the flash tube as well;

trigger means for triggering the firing of said flash tube;

control means for, in a first condition, simultaneously actuating said switching element and said trigger means, and at a second condition, actuating said trigger means after a delay from the actuation of said switching means; and

means for setting said control means selectively to one of said first and second condition.

4,608,523

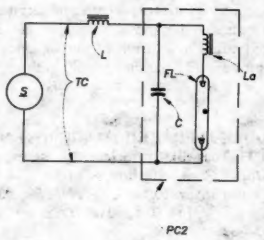
PHASE CORRECTION FOR SERIES-RESONANT BALLASTS

Ole K. Nilssen, Caesar Dr. RR. 5, Barrington, Ill. 60010

Filed Jan. 16, 1984, Ser. No. 570,969

Int. Cl.⁴ H05B *37/00, 39/00, 41/14*

U.S. Cl. 315—244 **2 Claims**



1. A ballast means adapted to power a gas discharge lamp from a source of AC voltage, said source having a pair of output terminals, said ballast means comprising:

a first inductor means connected in series with a capacitor means, thereby to form a first series-circuit;

first connect means operable to permit connection of said first series-circuit across said pair of output terminals;

a second inductor means connected in series with said gas discharge lamp, thereby to form a second series-circuit; and

second connect means operable to connect said second series-circuit in parallel with said capacitor means;

whereby, whenever only the first series-circuit is connected with the output terminals, power is drawn from the AC source at a power factor that is substantially the same as the power factor at which power is drawn from the AC source when said second series-circuit is connected in parallel with said capacitor means, the first series circuit having an unloaded Q factor, the first series circuit in combination with said second series circuit having a loaded Q factor, the unloaded Q factor being substantially larger than the loaded Q factor.

4,608,524
OUTPUT CIRCUIT AND BRUSHLESS MOTOR USING THE SAME

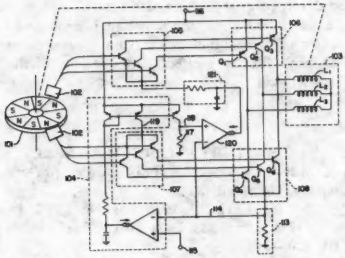
Nobuyoshi Yokobori, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 569,762, Jan. 10, 1984, Pat. No. 4,535,276. This application Apr. 29, 1985, Ser. No. 728,801

Claims priority, application Japan, Jan. 12, 1983, 58-3675; Jan. 24, 1983, 58-10405; Jan. 25, 1983, 58-10698; Jan. 26, 1983, 58-11858; Jan. 27, 1983, 58-12318; Jan. 28, 1983, 58-13054

Int. Cl.[4] H02P *6/02*

U.S. Cl. 318—254 **17 Claims**



1. A brushless motor comprising: a permanent magnet rotor multipole-magnetized; armature windings of plural phases and connected at one ends in common; a position detector for detecting the rotational positions of said rotor and armature windings; pairs of push-pull output transistors connected to phases of said aramture windings and equal in phase number to said phases of said armature windings; first current detecting means for detecting currents flowing in said armature windings; a first amplifier for amplifying a difference between the output signal of said first current detecting means and a switching means which switches the output of said first amplifier corresponding to the output of said position detector so that the exciting phase of each of said armature windings is energized by one of said pair of output transistors; a second current detecting means which outputs a signal corresponding to the base current of said one transistor; a second amplifier for amplifying a difference between the output signals of said first and second detecting means; and a second position signal switching means which energizes the exciting phases of said armature windings by the other of said pair of output transistors, whereby said second amplifier controls the conductive state of the other transistor so as to keep a constant ratio of the base current of said one transistor to a current flowing in said first current detecting means, thereby generating a torque corresponding to a torque command input.

4,608,525
CELLULAR TYPE ROBOT APPARATUS

Kinji Mori, Yokohama; Shoji Miyamoto, Kawasaki, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1984, Ser. No. 623,087

Claims priority, application Japan, Jun. 22, 1983, 58-110925

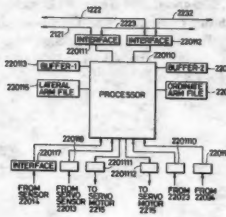
Int. Cl.[4] G05B *19/42*

U.S. Cl. 318—568 **16 Claims**

1. A cellular type robot apparatus having a cellular type component part consisting of a plurality of intercoupled robot cells, said component part being capable of controlling its shape through coordinate but independent movements by said robot cells; and

an information transmission medium connecting each of said robot cells to other robot cells;

each of said robot cells including means for sending to other robot cells on said transmission medium information related to an operating status of said component part and means for independently determining and controlling the movements of its robot cell based on information received



from said transmission medium, and at least one robot cell including means for detecting an operating status of said component part.

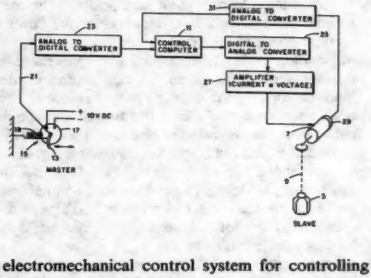
4,608,526
ELECTROMECHANICAL ACTUATOR FOR THE TONGS OF A SERVOMANIPULATOR

H. Lee Martin, and Stephen M. Killough, both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 19, 1985, Ser. No. 724,865

Int. Cl.[4] G05B *11/01*

U.S. Cl. 318—628 **3 Claims**



1. An electromechanical control system for controlling a pair of tongs in a servomanipulator system, copmrising:

a servo motor mechanically coupled to said pair of tongs for opening and closing said pair of tongs in response to a drive signal applied to said servo motor;

an actuator means including a spring biased trigger mechanism operable by an operator in which squeeze force applied by said operator to said trigger mechanism is resisted to produce an artificial force reflection to said operator for generating a control signal proportional to the displacement and squeeze force applied by said operator to said trigger mechanism;

an analog-to-digital converter connected to receive said control signal at an input thereof, a digital computer connected and programmed to generate a digital drive signal at an output thereof which is proportional to the rate of displacement of said trigger and the squeeze force applied by said operator; and

an analog-to-digital converter connected between the output of said computer and an input of said servo motor so that said pair of tongs are operated to open or close in corresponding response to the displacement of said trigger mechanism of said actuator means and maintain an applied force proportional to the operator squeeze force.

4,608,527

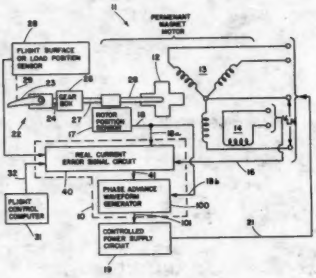
PHASE ADVANCE WAVEFORM GENERATOR FOR BRUSHLESS DC ACTUATOR SYSTEM CONTROLLER

Timothy F. Glennon, and Jayant G. Vaidya, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 20, 1982, Ser. No. 451,642

Int. Cl.[4] H02P *5/40*

U.S. Cl. 318—685 **3 Claims**



1. A motor control circuit for a permanent magnet motor having a rotor, motor windings, motor winding current transformer means and a rotor speed/position sensing means,

a power supply means coupled across said motor windings, said power supply providing a motor voltage waveform to said motor windings,

a load to be positioned by said motor, a load position sensing means, said load drivingly coupled to said motor rotor,

command means to provide a load position command signal to command a load position, said motor control circuit including in combination:

load position error detecting means coupled to said load position sensing means and to said command means, said load position error detecting means providing a load position error signal which is a function of the difference between a load position sensed and a load position commanded by said load position command signal,

reference speed means receiving said load position error signal and providing a reference speed signal output having a magnitude and direction proportional to a rotor speed required for a load position commanded by said load position command signal,

speed signal summing means coupled to said rotor speed/position sensing means to receive a signal representative of said rotor speed, said signal summing means additionally coupled to said reference speed means to receive said reference speed signal output, said summing means thereby providing a speed error signal which is a function of the difference and direction between said sensed rotor speed and said reference speed signal,

means to receive said speed error signal and provide a real current reference signal having a magnitude and direction representative of the real current required for said motor to establish said load position commanded,

real current signal generating means coupled to said current transformer, said real current signal generating means providing a signal representative of the magnitude and direction of the real current present in said motor windings,

real current summing means coupled through said means to receive said speed error signal and to said speed signal summing means to receive said real current reference signal, said real current summing means additionally coupled to said real current signal generating means to receive said real current signal from said motor winding, said real current summing means providing a real current error signal which is a function of the difference between the magnitude and direction of said real reference current signal and said real current signal from said motor windings,

signal converting means for receiving said real current error signal and converting said real current error signal to an output signal representative of a phase angle that is proportional to said real current error signal,

a phase advance waveform generator coupled to receive respectively said output signal representative of said phase angle proportional to said real current error signal of said signal converting means and to said rotor position signal of said rotor speed and position sensing means,

said phase advance waveform generator providing a phase advanced power supply means control signal,

said control signal causing said motor voltage waveform to be advanced by an amount equal in phase to said phase angle of said signal converting means output signal to thereby efficiently effect a motor control that is responsive to load.

4,608,528

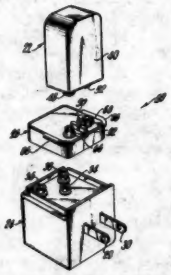
BATTERY CHARGER ADAPTER

Billy E. Stillwell, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Feb. 13, 1978, Ser. No. 877,281

Int. Cl.[4] H02J *7/00;* **H01M** *2/10, 10/46*

U.S. Cl. 320—2 **21 Claims**



1. In a battery charging system which includes a rechargeable battery having terminals and charging means having corresponding terminals adapted to contact said battery terminals, the improvement of a safety interface comprising:

index means on said charging means operative to prevent battery terminal contact with said charging means terminals when a battery is not equipped to mate with said index means; and

a battery housing, said index means including a fulcrum disposed among terminals of said charging means about which fulcrum said charging means can pivot relative to said housing, said housing having index receiving means to mate with said index means when said charger and battery terminals are connected whereby only a battery having said index receiving means may be connected to said charging means.

12. In a battery charging system which includes a rechargeable battery having terminals and charging means having corresponding terminals adapted to contact said battery terminals, the improvement of a safety interface comprising:

index means on said charging means operative to prevent battery terminal contact with said charging means terminals when a battery is not equipped to mate with said index means;

a battery housing, said index means extending from a surface of said charging means to contact said housing and to serve as a fulcrum about which said charging means can pivot realtive to said housing, said housing having index

receiving means to mate with said index means when said charger and battery terminals are connected whereby only a battery having said index receiving means may be connected to said charging means; and wherein

said charger means includes a charge source and an adapter, said index means being on said adapter.

20. In a battery charging system which includes a rechargeable battery having terminals, and charging means having corresponding terminals adapted to contact said battery terminals, the improvement of a safety interface comprising:

index means on said charging means operative to prevent battery terminal contact with said charging means terminals when a battery is not equipped to mate with said index means; and

a battery housing having index receiving means to mate with said index means when said charger and said battery terminals are connected whereby only a battery having said index receiving means may be connected to said charging means, a portion of said index means extending from said charging means to contact a surface of said battery housing upon a connection of said battery terminals and said charging means terminals to serve as a fulcrum about which said battery housing can be pivoted relative to said charging means.

4,608,529
CONSTANT VOLTAGE CIRCUITS

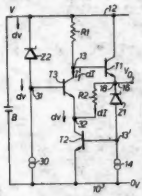
Andrew M. Mallinson, Salem, N.H., assignor to Ferranti plc, Gatley, England

Filed Sep. 14, 1984, Ser. No. 650,644

Claims priority, application United Kingdom, Sep. 15, 1983, 8324751

Int. Cl.⁴ G05F *1/44*

U.S. Cl. 323—275 **9 Claims**



1. A constant voltage circuit comprising:

first and second rails connectable to a variable supply voltage source;

a first arm and a second arm connected in parallel between said rails;

said first arm including a first reference voltage means having first, second and intermediate terminals, said intermediate terminal having a different potential than said second terminal relative to said first terminal, and said first reference voltage means first terminal being connected to said first rail;

a circuit output line connected to said first reference voltage means second terminal;

said second arm including a first bipolar transistor having a pair of main terminals and a base terminal, said first bipolar transistor base terminal being connected to said first reference voltage means intermediate terminal, and one of said first bipolar transistor main terminals being connected to said first rail, and said second arm also including a first resistor coupling the other of said first bipolar transistor main terminals to said second rail, a first intermediate point in said second arm being defined intermediate said first resistor and said other of said first bipolar transistor main terminals;

a second resistor having a resistance value comparable to that of said first resistor and connected between said first intermediate point in said second arm and said output line; and

means for causing a potential which tracks the potential of said second rail to be applied to said first intermediate point in said second arm.

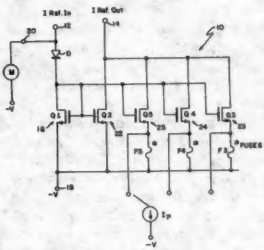
4,608,530
PROGRAMMABLE CURRENT MIRROR

Kanti Bacrania, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 9, 1984, Ser. No. 669,788

Int. Cl.⁴ G05F *3/20*

U.S. Cl. 323—315 **10 Claims**



1. A programmable current mirror circuit comprising:

a controlling transistor having first and second terminals defining a current path and a control terminal, said first terminal being connected to a circuit input terminal, said second terminal being connected to a reference terminal and said control terminal being connected to said first terminal;

a primary controlled transistor having first and second terminals defining a current path and a control terminal, said first terminal being connected to a circuit output terminal, said second terminal being connected non-programmably to said reference terminal and said control terminal of said primary controlled transistor being connected to said control terminal of said controlling transistor; and

a plurality of secondary controlled transistors each having first and second terminals defining a current path and a control terminal, said first terminal being connected to said circuit output terminal, said control terminal of said secondary controlled transistor being connected to said control terminal of said primary controlled transistor and programmable means for selectively connecting said second terminal to said reference terminal to determine the match of current at said circuit input terminal and said circuit output terminal.

4,608,531
TEST SET FOR TESTING AS A UNIT AN AMPLIFIER SYSTEM HAVING SEVERAL MODULES

Michael L. Stephens, 834 CRS, MACMAA, Hurlburt Field, Fla. 32544

Filed May 3, 1983, Ser. No. 491,105

Int. Cl.⁴ G01R *15/12*

U.S. Cl. 324—73 R **2 Claims**

1. A tester for an amplifier unit of an automatic flight control system of an aircraft, wherein the system includes input means comprising sensors and controls which directly or indirectly supply input signals to the amplifier unit, and output means comprising servomechanisms, with a flight director indicator having a plurality of indicators connected to indicate the output signals applied to the servomechanisms:

wherein said amplifier unit comprises several modules which plug into module receptacles on a common chassis, and

system receptacle means for receiving plug means connecting the amplifier unit into the system input means and output means, with chassis wiring interconnecting the module receptacles and system receptacle means, wherein the amplifier unit provides a plurality of functions with different modules, the output means having separate servomechanisms for the different functions, with at least some functions having more than one module;

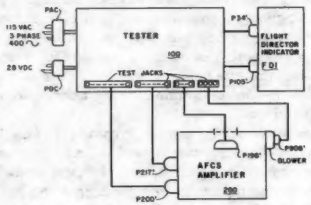
wherein said tester comprises:

a plurality of test jacks, wiring extending between the test jacks and a plurality of plugs comprising amplifier plug means for connection to said system receptacle means of an amplifier unit to be tested, and also indicator plug means for connection to a flight director indicator, each plug having a plurality of pins, the test jack being connected to individual pins of the amplifier plug means;

a plurality of impedance devices connected between a ground line and pins of the indicator plug means, the impedance devices also being connected to some of the test jacks and via said wiring to corresponding pins of the amplifier plug means to be connected in place of and simulate said servomechanisms;

a plurality of switches connected between a source of direct-current power and some of the test jacks for selectively providing power to the amplifier unit and to the flight director indicator to test different ones of said functions, and to simulate system input signals;

two identical signal sources with output test jacks, which permits jumper connections from the signal sources to test jacks of selected pins of the amplifier plug means to simulate system input signals, and permitting different signals to be jumpered to test jacks for separate inputs of the amplifier unit;



wherein each of said signal sources is an alternating current source comprising a transformer with a secondary winding having a grounded center tap, a potentiometer connected across the secondary winding with a moveable tap which when centered is at ground potential, movement of the tap in one direction provides output signals of one phase, and movement of the tap in the other direction provides output signals of the opposite phase, said signal sources each including a two-pole switch connected between its said secondary winding and its said potentiometer, with series resistors, to provide different output voltage ranges;

being so constructed and arranged that the amplifier unit may be tested as a unit the way it is used in the system, with indications on the flight director indicator, but independently of said system input means and output means, the amplifier unit along being removed from the aircraft for testing;

wherein said amplifier unit includes duplicate modules to provide dual channels for at least one function, with at least some of the input signals being also duplicated from said two sources and requiring duplicate output signals for the dual channels to indicate that both channels are operating normally;

wherein the tester is capable of providing the same input via jumpers from test jacks of the signal sources to test jacks for corresponding inputs of the duplicate modules for the dual channels so that the duplicate modules may be balanced, as indicated by the indicator means:

wherein at least one of the functions uses first and second modules, with the first module providing preprocessing for the second module, such that testing for the function is facilitated by having the modules tested together as a unit when simulated input signals are supplied to the first module and resulting output signals from the second module are monitored on the flight director indicator.

4,608,532

MULTI-PROBE METERING APPARATUS

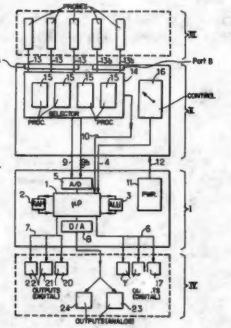
Jean P. Ibar, Villiers S/Orge, France, and John R. Saffell, Farway Barton, Great Britain, assignors to Solomat S.A., Ballainvilliers, France

Filed Oct. 27, 1983, Ser. No. 545,983

Claims priority, application France, Dec. 3, 1982, 82 20364

Int. Cl.[4] **G01R** *15/08, 15/10;* **G01D** *5/12*

U.S. Cl. 324—73 R **9 Claims**



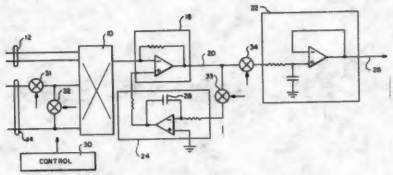
1. Multi-probe metering apparatus for measuring electrical magnitude or magnitudes associated with electrical magnitudes and for displaying the results or for transmitting them to users, the apparatus being characterised by a modular structure consisting of a central unit (I) comprising an input signal acquisition circuit providing signals for a memory processing circuit (**1, 2, 3**) supplying the display means and signal output means for users (**19, 24**) of at least one detachable module (II) establishing a link between the central unit (I) and a pick-up or pick-ups (III), the said module (II) being associated with one or a plurality of specific pick-ups (III), the said module (II) being itself connected (**4, 9, 10**) to the central unit (I) by electrical connections which are established at the same time as the mechanical connection is made between the module (II) and the central unit (I), each module (II) comprising processing circuits (**15**) linked to the pick-ups (III) which the module (II) is capable of accepting, and means (**16**, gate A, gate B) supplying the central unit (I) with information to identify the pick-up or pick-ups (III) with which the module (II) is associated in order to control within the central unit (I) the corresponding treatment of the signals provided by the pick-up(s) (III), each module having two input gates connected by two distinct routes to the central unit which receives and processes separately and independently the signals emanating from the two routes, after which it combines them.

4,608,533

AUTOMATIC COMPENSATION CIRCUIT FOR USE WITH ANALOG MULTIPLIER

Alan H. Starkie, San Jose, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 22, 1983, Ser. No. 506,675
Int. Cl.[4] G06G 7/16
U.S. Cl. 324—142 4 Claims



1. An automatic compensation circuit comprising

an analog multiplier connected to receive a first signal representing instantaneous voltage and a second signal representing instantaneous current for generating a third current signal representing the product of said first and second signals,

means for converting said third current signal to a fourth voltage signal, and

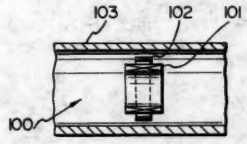
compensation means connected to said converting means for adjusting the output of said converting means to zero during zero crossing points of at least one of said first or second signals.

4,608,534

EDDY CURRENT PROBE FOR DETECTING LOCALIZED DEFECTS IN CYLINDRICAL COMPONENTS

Valentino Cecco, and Hugh W. Ghent, both of Deep River, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jun. 16, 1983, Ser. No. 504,977
Claims priority, application Canada, Oct. 22, 1982, 414020
Int. Cl.[4] G01N 27/90; G01R 33/12
U.S. Cl. 324—238 6 Claims



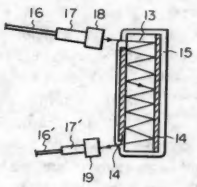
1. In an eddy current probe for internally or externally inspecting cylindrical components to detect a localized defect, a coil arrangement having two or more coils each having a predetermined axial length, connected in two arms of a four arm AC bridge detector circuit such that a least a first of the coils induces and senses eddy currents in a cylindrical component to be inspected, wherein the probe further includes a first thin cylindrical electrically conductive sleeve positioned coaxially with the first coil, so as to be located between the first coil and the cylindrical component, the sleeve being narrower than the axial length of the first coil and positioned symmetrically with respect to the axial length of the first coil to distort the induced eddy currents in phase and amplitude thereby generating a detected signal due to the localized defect in the cylindrical component that is distinct from detected noise signals.

4,608,535

MAGNETIC FIELD AND CURRENT MEASURING DEVICE USING A FARADAY CELL WITH A THIN ELECTRICALLY CONDUCTIVE FILM SUBSTANTIALLY COVERING THE FARADAY CELL

Kohji Tada; Yoshiki Kuhara; Masami Tatsumi, and Tsutomu Mitsui, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 2, 1982, Ser. No. 446,395
Claims priority, application Japan, Dec. 7, 1981, 56-197350
Int. Cl.[4] G01R 33/02, 31/00; G02B 5/30
U.S. Cl. 324—244 3 Claims



1. A magnetic field and electric current measuring device which comprises:

a Faraday cell made of a material selected from the class consisting of bismuth silicon oxide ($Bi_{12}SiO_{20}$) and bismuth germanium oxide ($Bi_{12}GeO_{20}$),

an electrically conductive thin film applied to the outer surface of said Faraday cell and substantially completely surrounding said cell to provide an equipotential surface which prevents an electric field from acting upon the interior of said cell, and

means for passing polarized light back and forth at least once through said Faraday cell along the optic axis thereof,

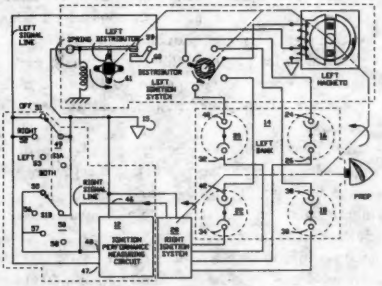
a magnetic field applied in the direction of the optic axis of said Faraday cell being measured based on an angle of rotation of the polarization plane of said polarized light.

4,608,536

IGNITION PERFORMANCE MEASURING CIRCUIT

Aaron R. Jacobs, 5821 Lakehaven Way, Yorba Linda, Calif. 92686, and John W. Gustafson, 2121 Valderas Dr., Apt. #64, Glendale, Calif. 91208

Filed Oct. 3, 1984, Ser. No. 657,389
Int. Cl.[4] F02P 17/00, 15/08
U.S. Cl. 324—399 25 Claims



1. A dual ignition performance monitor circuit for use by an operator, the invention circuit being coupled to a reciprocating internal combustion engine having a predetermined number of cylinders, each cylinder having

a left and right spark plug,

a left ignition system providing ignition firing signals to each respective left spark plug in a predetermined sequence and a right ignition system providing ignition firing signals to each respective right spark plug in a predetermined sequence, said left ignition system having

a left signal line providing a left attenuated ignition signal and said right ignition system having

a right signal line providing a right attenuated ignition signal,

said attenuated left and right ignition signals forming a recurrent series of relatively concurrent left and right attenuated ignition signal pairs,

said ignition signal pairs corresponding in number to said predetermined number of cylinders,

each respective left and right attenuated ignition signal corresponding to the ignition firing signal applied to the respective engine spark plug in operation, said ignition performance monitor circuit comprising:

means for conditioning and scaling said left and right attenuated ignition signals and for providing respective left and right conditioned attenuated ignition signals;

first channel means having

first and second inputs, said first and second inputs being coupled respectively to said left and right conditioned attenuated ignition signals for measuring the relative peak amplitude of the algebraic difference between

relatively concurrent left and right conditioned attenuated ignition signals and for providing a repeating series of amplitude difference signals, each amplitude difference signal corresponding in sequence to

a respective ignition signal pair and corresponding in peak amplitude to the algebraic difference between the left and right conditioned attenuated ignition signals forming the respective ignition signal pair;

means responsive to said amplitude difference signals for conditioning said series of amplitude difference signals and for scaling and comparing said amplitude difference signal with

a predetermined amplitude reference signal and for providing an

ignition amplitude signal;

second channel means having first and second inputs coupled respectively to said left and right conditioned attenuated ignition signals for measuring the relative time difference between said left and right conditioned attenuated ignition signals, and for providing

a repeating series of phase difference signals, each phase difference signal corresponding to the time difference between relatively concurrent left and right conditioned attenuated ignition signals;

means responsive to said repeating series of phase difference signals for averaging and scaling said repeating series of phase difference signals and providing

a timing signal characterizing the averaged relative phase difference signal in relation to

a predetermined phase reference signal;

whereby, degradation in said dual ignition system is monitored by observing the magnitude of said ignition amplitude signal indicating the difference between the amplitude difference signal and said predetermined amplitude reference signal, and by observing the magnitude of said phase difference signal with respect to said predetermined phase reference signal.

4,608,537

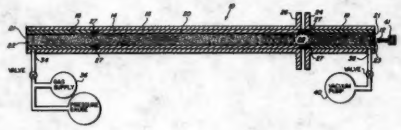
LOW PERTURBATION ELECTRON INJECTOR FOR CYCLIC ACCELERATORS

Frederick Mako, Fairfax Station, Va.; Wallace Manheimer, Silver Spring; Christos A. Kapetanokos, Bethesda, both of Md., and Frederick Sandel, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1984, Ser. No. 620,646

Int. Cl.[4] H05H *11/00, 7/08*

U.S. Cl. 328—237 **7 Claims**



1. An apparatus for conducting an electron beam through a high intensity section of an external magnetic field, said high intensity section having a first side and a second side and being disposed therebetween, comprising

a first region for conducting an electron beam through said high intensity external magnetic field, said first region being located in and running through the high intensity section of the external magnetic field from the first side to the second side thereof;

means for producing a tapered current density having a localized azimuthal magnetic field within said first region, said localized azimuthal field being greater than said external field's transverse component within the first region;

said tapered current density means located in the first region in such a way that the tapered current density begins on the first side and ends on the second side of the high intensity section of the external magnetic field, said tapered current density means being magnetically neutral outside the first region;

and means for injecting an electron beam into the first region so the electron beam will be axially conducted through the tapered current density means.

4,608,538

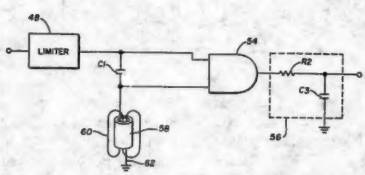
FM QUADRATURE DETECTOR WITH FERRITE BEAD TUNED CIRCUIT

Keith V. Anderson, Rural Meade County, S. Dak., assignor to Anderson Scientific, Black Hawk, S. Dak.

Filed Dec. 7, 1983, Ser. No. 558,920

Int. Cl.[4] H03D *3/00, 3/26*

U.S. Cl. 329—103 **8 Claims**



1. A quadrature detector circuit for demodulating frequency modulated information signals having a specified center frequency, comprising:

an input terminal for receiving said frequency modulated information signals;

means operably coupled to said terminal for splitting said signal into a reference portion and a variable portion;

first means for shifting the phase of said variable signal portion operably coupled to said splitting means, for shifting the phase of said variable signal portion relative to the

phase of said reference signal portion by a predetermined amount of phase shift;

second means for shifting the phase of said variable signal portion relative to said predetermined amount of phase shift in proportion to an amount of frequency change of said information signal relative to said center frequency; and

means operably coupled to said splitting means and said first and second shifting means for detecting coincidence between said reference signal portion and said variable signal portion,

said second phase shifting means comprising a ferrite bead and means operably coupling said bead to said first phase shifting means.

4,608,539

FM DETECTOR WITH INJECTION LOCKED DIVIDER INPUT CIRCUIT

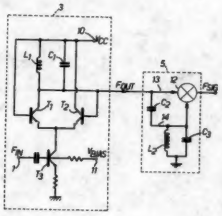
Rodney J. Lawton, Wiltshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Nov. 16, 1984, Ser. No. 671,948

Claims priority, application United Kingdom, Nov. 18, 1983, 8330761; Aug. 17, 1984, 8421012

Int. Cl.[4] H03D *3/02;* **H04B** *1/16, 7/00*

U.S. Cl. 329—103 **4 Claims**



1. A frequency modulation (FM) detection arrangement comprising:

a frequency divider having a multiplier for providing a frequency divided signal in response to a radio signal having a modulating wave thereon received at a first input of said multiplier and in response to said frequency divided signal received, via a band-pass filter, at a second input of said multiplier; and

an FM detector coupled to said frequency divider and having a phase-sensitive detector for receiving said frequency divided signal via first and second signal paths and for providing a signal indicative of the information content of the modulating wave of said radio signal.

4,608,540

PHASE-SHIFT KEYING DEMODULATOR

Masahiro Tsuchiya, and Masaharu Mori, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1984, Ser. No. 624,638

Claims priority, application Japan, Jul. 4, 1983, 58-122171; Jul. 4, 1983, 58-122172

Int. Cl.[4] H03K *9/06*

U.S. Cl. 329—107 **4 Claims**

1. A PSK (phase-shift keying) demodulator which comprises:

an input terminal to which a PSK signal encoded by modulating the phase of a carrier with a digital signal is applied;

first reference signal oscillation means for generating a first reference signal having the same frequency as said carrier;

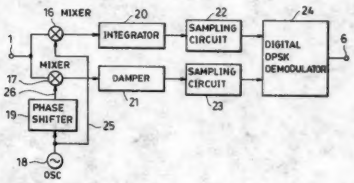
second reference signal oscillation means for generating a second reference signal having a 90 degree phase difference from said first reference signal;

first multiplication means for multiplying said PSK signal and said first reference signal;

second multiplication means for multiplying said PSK signal and said second reference signal;

first phase data extracting means for extracting a first low pass component from the multiplication output from said first multiplication means, said first low pass component representing carrier phase data;

second phase data extracting means for extracting a second low pass component from the multiplication output from said second multiplication means, said second low pass component representing carrier phase data; and



decoding means for demodulating said digital signal from said first and second low pass components, said decoding means including: A/D conversion means for converting each of said first and second low pass components from an analog to a digital signal; memory means for storing each said digital signal from said A/D conversion means for a time corresponding to one symbol; and discrimination means for comparing a digital signal supplied from said A/D conversion means one symbol later with a respective said digital signal stored in said memory means and discriminating whether said compared digital signals each have the same phase difference θ or have respective phase differences of θ and $\theta \pm 180°$.

4,608,541

ISOLATION AMPLIFIER

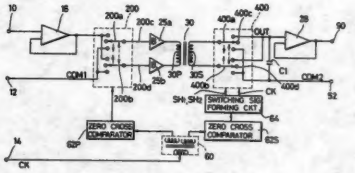
Ikuo Moriwaki, and Shinji Taniguchi, both of Tokyo, Japan, assignors to Analog Devices, KK, Tokyo, Japan

Filed May 21, 1985, Ser. No. 736,653

Claims priority, application Japan, Aug. 10, 1984, 59-168190; Oct. 8, 1984, 59-210670

Int. Cl.[4] H03F *3/38, 3/217*

U.S. Cl. 330—10 **13 Claims**



1. An isolation amplifier comprising:

an isolation transformer;

switching type balanced modulator means for delivering to the input of said isolation transformer a square wave carrier modulated by an input signal;

demodulator means for reproducing the input signal by inverting alternate ones of the positive and negative pulses from the output of said isolation transformer;

a holding capacitor coupled to the output of said demodulator means;

switch means interposed to prevent the demodulated output signal of said demodulator from being delivered to said

capacitor during each discontinuous gap between the edges of said positive and negative pulses; and

a pulse forming circuit connected to turn off said switch means and place said holding capacitor in a holding state during the period of such discontinuity to supply the charge previously stored therein.

4,608,542

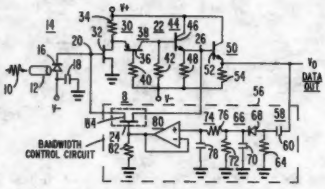
BANDWIDTH CONTROLLED DATA AMPLIFIER

Stefan A. Siegel, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 6, 1985, Ser. No. 741,874

Int. Cl.[4] H03G *3/30*; H03F *3/08*

U.S. Cl. 330—279 **11 Claims**



1. An amplifying arrangement for a data signal, comprising:

a voltage amplifier including signal input and signal output terminals and adapted for amplifying said data signal;

controllable feedback resistance means coupled between said signal input and signal output terminals of said amplifier to form a transimpedance amplifier;

differentiating means coupled to receive said data signal for generating a stream of differentiating pulses including a pulse in response to each transition of said data signal; and

control signal generating means coupled to said differentiating means and to said controllable feedback resistance means for generating a control signal for controlling said resistance means to reduce said resistance in response to increases in the number per unit time of said pulses and to increase said resistance in response to decreases in the number per unit time of said pulses whereby the resistance of said feedback means is responsive to the data rate of said data signal for selecting the bandwidth of said transimpedance amplifier.

4,608,543

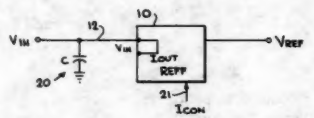
CONTROLLABLE EFFECTIVE RESISTANCE AND PHASE LOCK LOOP WITH CONTROLLABLE FILTER

Neil R. Adams, San Francisco, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 17, 1984, Ser. No. 682,384

Int. Cl.[4] H03L *7/06*; H03H *7/44*

U.S. Cl. 331—8 **16 Claims**



1. An apparatus comprising:

a differential pair of transistors, one of said transistors being base biased in response to an input voltage and the other of said transistors being base biased in response to a reference voltage, said differential pair of transistors providing an output current at an output node of said differential pair of transistors which is proportional to the difference between said reference voltage and said input voltage, said input voltage being supplied to an input node of said differential pair of transistors, the constant of proportionality being determinable by a selectable current source means;

said current source means comprising a first variable current source means, responsive to a control signal, for providing a first settable current at the collector of said one transistor and a second variable current source means, responsive to the control signal, for providing a second settable current at the emitters of said differential pair of transistors, both first and second said settable currents acting in conjunction to affect the magnitude of the output current; and

control means for supplying the control signal to said first and second variable current source means.

4,608,544

OSCILLATOR CIRCUIT

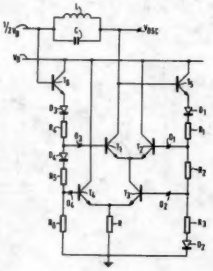
Ernst H. Nordholt, Berkel en Rodenrijs, and Cornelis A. M. Boon, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 27, 1984, Ser. No. 675,110

Claims priority, application Netherlands, Nov. 29, 1983, 8304085

Int. Cl.[4] H03L *5/00*

U.S. Cl. 331—109 **3 Claims**



1. An oscillator circuit comprising first and second transistors whose emitters are intercoupled and jointly connected to a variable current source, the first transistor being connected in a grounded-base connection, also comprising a parallel resonant circuit coupled to the collector of the first transistor, this collector being coupled to the base of the second transistor for a regenerative feedback of the circuit voltage, characterized in that said collector is also coupled to a control unit of the variable current source for an instantaneous variation of the current of the variable current source in dependence on the circuit voltage; and

wherein said variable current source comprises a third transistor whose collector is connected to the intercoupled emitters of the two first and second transistors and that the collector of the first transistor is coupled via an emitter follower to a first voltage divider a first output of which is connected to the base of the second transistor and a second output to the base of the third transistor.

4,608,545

MOVABLE CONTACT ARM ASSEMBLY FOR A CURRENT LIMITING CIRCUIT BREAKER

Andrew J. Kralik, Marysville, Ohio, assignor to Siemens-Allis, Inc., Atlanta, Ga.

Filed Sep. 24, 1985, Ser. No. 779,587

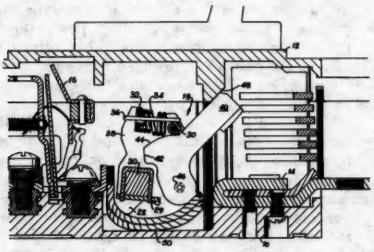
Int. Cl.[4] H01H *75/00, 77/00, 83/00*

U.S. Cl. 335—16 **15 Claims**

1. A movable contact arm assembly for a circuit breaker comprising:

a carrier having first and second guide plates with aligned roller guides and bracket supports;

a roller having a middle portion extending between the guide plates and end portions engaging the roller guides;
a bracket extending between the guide plates and engaging the bracket supports;
a spring positioned between the bracket and roller urging the roller along the roller guide; and



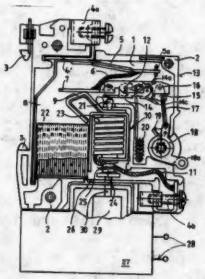
a contact arm having first and second cam surfaces and being positioned between the guide plates and pivotally connected thereto, said roller riding in said guide on said first and second cam surfaces, said roller moving from the first cam surface to the second cam surface as the contact arm moves from a closed position to an open position in response to preselected electromagnetic repulsion forces.

4,608,546

AUTOMATIC SWITCH WITH IMPACT-ARMATURE TRIPPING DEVICE

Joseph Westermeyer, Nuremberg, Fed. Rep. of Germany, assignor to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 664,009
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339400
Int. Cl.[4] H01H *83/00, 75/00*
U.S. Cl. 335—20 **11 Claims**



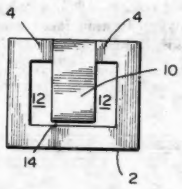
1. In an automatic switch including a narrow housing having a side wall, a movable contact element movable by a switch mechanism into contact with a fixed contact element to a closed position to be held in the closed position under force, and an impact-armature tripping means to release the closing force and open the switch contact elements having a coil, an impact armature core in the coil, an armature rod projecting forwardly toward the contacts, and a back side opposite to the side of the projecting rod disposed near and parallel to a region of the side wall, the improvement comprising:
the exterior of the side wall region parallel to the back side of the impact-armature tripping means is free of component parts of the automatic switch;
an axial bore hole in said armature core; and
an additional circuit-breaking device comprising,
an operating device,
a coupling rod operatively supported by said operating device to be activated thereby and projecting therefrom through said side wall region and into said axial bore hole in reciprocal sliding relationship therewith;
so that actuation of said coupling rod by said operating device moves said coupling rod through said axial bore hole to move the armature rod to open the switch contact elements.

4,608,547

CORE AND CORE LAMINATIONS FOR ELECTROMAGNETIC DEVICES

Gera Iron, Ein Hashofet, Israel, assignor to Electrical Accessories Ein Hashofet, Kibbutz Ein Hashofet, Israel

Filed May 15, 1985, Ser. No. 734,051
Claims priority, application Israel, May 22, 1984, 71888
Int. Cl.[4] H01F *3/00*
U.S. Cl. 335—297 **5 Claims**



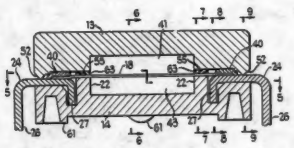
1. A core lamination for electromagnetic devices, comprising:
an open, substantially C-shaped frame having inwardly pointing end portions facing one another across a gap;
a central limb of a substantially rectangular shape, tightly insertable with its width into the gap between said end portions and, when thus inserted, defining within the space enclosed by said frame two window-like openings, each of which has a height-to-width ratio of about 3:1, wherein the shapes and relative dimensions of said open frame and said central limb are such that they are capable of interlocking and of fully tesselating a surface delimited by two parallel edges.

4,608,548

MINIATURE FUSE

John Borzoni, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Jan. 4, 1985, Ser. No. 688,956
Int. Cl.[4] H01H *85/02*
U.S. Cl. 337—201 **22 Claims**



1. A miniature electrical fuse for use with a circuit voltage of at least 60 volts comprising:
a housing comprising an insulating base defining a cavity-forming depression thereon opening onto the top or inner side thereof and presenting a pair of insulating surfaces on

opposite sides of said depression and a cover enclosing the top of said base;

a pair of electrically conducting terminals mounted on said base beneath said cover, each terminal having a fuse wire-receiving inner end portion on said base and an outer end portion extending away from said base; and

a length of fuse wire extending generally along said insulating surfaces where it spans said depression and extends beyond the outer ends of said surfaces, said inner end portions of said terminals being disposed in planes below the outer ends of said insulating surfaces so as to be out of alignment therewith and so that the fuse wire tautly extends over the outer ends of said insulating surfaces and then makes connection to said inner end portions of said terminals.

4,608,549

HYDROGEN-SELECTIVE SENSOR AND MANUFACTURING METHOD THEREFOR

Kiyoshi Fukui, Wakayama, Japan, assignor to New Cosmos Electric Co. Ltd., Japan

Filed Dec. 22, 1983, Ser. No. 564,446

Claims priority, application Japan, Dec. 28, 1982, 57-227568

Int. Cl.[4] H01L *7/00*; H01B *1/06*

U.S. Cl. 338—34 **6 Claims**

1. A hydrogen-selective gas sensor comprising a gas-sensing element composed of a semiconductor, and a thin layer inactive for oxidation of hydrogen and formed on a surface of said gas-sensing element so as to cover same, the thin layer being selected from the group consisting of silicon oxide, aluminum oxide and silicon nitride, and the semiconductor comprising a sintered piece of metal oxide selected from the group consisting of SnO_2, ZnO, Co_3O_4, WO_3, In_2O_3+Pt, α-Fe_2O_3 and $BaTiO_3$+Np_2O_3, wherein said thin layer has a diminished porosity to permit easy passage of hydrogen molecules, and to check passage of molecules of other gases greater than hydrogen molecules.

4,608,550

ELECTRIC SIGNAL TRANSMISSION SYSTEM ON A ROAD VEHICLE

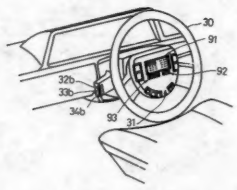
Kazuyuki Umebayashi, and Nobuyasu Suzumura, both of Tokyo, Japan, assignors to Aisin Seiki Kabushikikaisha, Japan

Filed Jul. 19, 1982, Ser. No. 399,582

Claims priority, application Japan, Aug. 25, 1981, 56-132926; Aug. 25, 1981, 56-132927; Aug. 26, 1981, 56-133579

Int. Cl.[4] G08C *1/00*

U.S. Cl. 340—22 **11 Claims**



1. An electric signal transmission system between a control board on a steering wheel and an electric controller fixed to a road-vehicle, said road-vehicle including a road-vehicle power supply, said electric signal transmission system comprising:

a control board supporting mechanism mounted on a steering wheel adapted to support said control board in a stationary state relative to said road-vehicle irrespective of rotation of said steering wheel;

a plurality of input key switches, a modulation circuit, a transmitting control electronic device coupled to said modulation circuit for controlling transmission of information, and a first constant voltage power supply circuit (**70**) which are incorparated in said control board, said modulation circuit comprising a FSK modulation circuit (**100**) having a FSK modulator (**102**), an output cut-off gate (**103**) for controlling time divisional exchange and a coupling capacitor connected to a first electric line (SPL) for differentiating a FSK modulated binary signal and for transmitting the differentiated signal to said first electric line (SPL);

an electric controller disposed on the road-vehicle at a position mechanically remote from said steering wheel and including a demodulation circuit, a receiving control electronic device coupled to said demodulation circuit for controlling reception of said information, and a second constant voltage power supply circuit; and

an electric coupling means adapted to electrically couple said control board and said electric controller, said electric coupling means comprising: a first slip ring fixedly mounted to said control board; a high frequency interrupting coil (HCL1) for connecting said first constant voltage power supply circuit (**70**) to said first electric line (SPL), said first electric line being connected to said first slip ring; a second slip ring opposite said first slip ring, a second electric line (VPL) connected to said second slip ring with said demodulation circuit being coupled to said second electric line, and a second high frequency interrupting coil (HCL2) for coupling said second constant voltage power supply (**120**) and said road-vehicle power supply to said second electric line, and brushes brought into contact with both of said slip rings, whereby said slip rings conduct modulated communications between said modulation and demodulation circuits while simultaneously coupling said first and second constant voltage power supply circuits to said road-vehicle power supply.

4,608,551

SPEED ALARM SYSTEM FOR AUTOMOTIVE VEHICLE

Yuji Takeo, Toyokawa, and Tomohisa Yoshimi, Gamagoori, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 3, 1984, Ser. No. 627,617

Claims priority, application Japan, Jul. 5, 1983, 58-122079; May 1, 1984, 59-89120

Int. Cl.[4] B60Q *1/00*

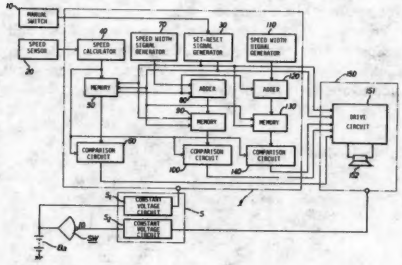
U.S. Cl. 340—53 **9 Claims**

1. A speed alarm system for an automotive vehicle, comprising:

first means for producing a speed signal indicative of the actual speed of the vehicle;

processing means for: (1) producing a first command speed signal indicative of a first command speed, (2) producing a speed width signal indicative of a predetermined speed width, (3) adding a value of said speed width signal to a value of said first command speed signal to produce a second command speed signal indicative of a second command speed defined by the added value, (4) producing a first output signal when a value of said speed signal exceeds the first command speed, and for maintaining it for a first predetermined alarm time, (5) producing a second output signal when the value of said speed signal exceeds the second command speed, and for maintaining it for a second predetermined alarm time, (6) producing a first command speed display signal indicative of the first command speed when the value of said speed signal exceeds

the value of said first command speed signal and maintaining it until the value of said speed signal reaches the value of said second command speed signal or the value of said speed signal decreases below the value of said first command speed signal, (7) producing a second command speed display signal indicative of the second command speed when the value of said speed signal exceeds the value of said second command speed signal and maintain-



ing said second command speed display signal while the value of said speed signal is maintained in a value larger than the value of said first command speed signal;

means responsive to said first and second output signals for generating first and second alarm sounds respectively; and

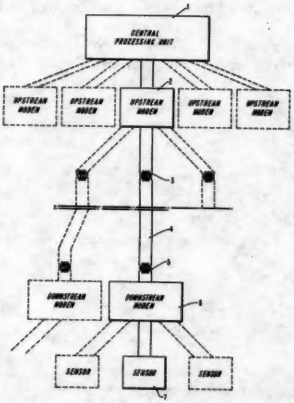
a single display means responsive to said first and second command speed display signals for producing different displays corresponding to said first and second command speeds, respectively.

4,608,552

PROCESS AND DEVICE FOR THE REMOTE TRANSMISSION OF SIGNALS AND APPLICATION TO THE DETECTION AND/OR MEASUREMENT OF THE QUANITY OF COMBUSTIBLE GAS IN AN ATMOSPHERE

Maurice Boutonnat, Gouvieux, and Gérard Rose, Villers Saint Paul, both of France, assignors to Charbonnages de France, Paris, France

Filed Dec. 13, 1982, Ser. No. 449,153
Claims priority, application France, Dec. 14, 1981, 81 23272
Int. Cl.[4] H04Q *9/00*; G08C *19/16*
U.S. Cl. 340—310 R **18 Claims**



1. A process for remotely transmitting data signals issued by at least one sensor from that sensor to a central station over a transmission line comprising the steps of:

(a) supplying to said transmission line an alternating current signal of approximately constant current intensity;

(b) coupling said sensor to said line to power said sensor using said alternating current signal on said line;

(c) employing said alternating current signal to transmit an interrogation signal from said central station to said sensor over said transmission line; and

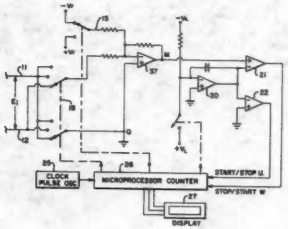
(d) employing said alternating current signal to transmit a multibit, digital data signal from said sensor to said central station over said transmission line is response to receipt of said interrogation signal by transmitting over said line a complete bit of digital information in a cycle of said alternating current signal by changing, over a complete cycle, the value of a load applied at said sensor to said transmission line at zero-cross over points of said alternating current signal.

4,608,553

ANALOG TO DIGITAL CONVERTER WITHOUT ZERO DRIFT

A. Neuman Ormond, 12020 E. Rivera Rd., Santa Fe Springs, Calif. 90670

Continuation-in-part of Ser. No. 262,555, May 11, 1981. This application Mar. 1, 1983, Ser. No. 471,180
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 NT **1 Claim**



1. A system for converting an analog signal to a numerical digital count directly proportional to said analog signal without zero drift, including, in combination:

(a) a differential operational amplifier means;

(b) a source providing a reference voltage connected to said differential operational amplifier means;

(c) a first reversing switch connected to pass said analog signal to the differential operational amplifier means such that the analog signal is added to the reference voltage when said switch is in a first position to provide two first output voltage levels;

(d) a ramp voltage generating means;

(e) two cross-over detectors connected to receive said two first output voltage levels respectively and a first ramp voltage from said ramp voltage generating means to provide first start and stop signals at points in time when said first ramp voltage crosses over said two first output voltage levels;

(f) an oscillator for generating a series of clock pulses;

(g) means for effecting a first conversion including a counter for said clock pulses connected to receive said first start and stop signals from said cross-over detectors to provide a first numerical count of N1 pulses, throwing of said first reversing switch to a second position resulting in said analog signal being subtracted from said reference voltage to provide two second output voltage levels from said differential operational amplifier means and result in second start and stop signals from said cross-over detectors when a second ramp voltage from said ramp voltage

generator of the same slope as said first ramp voltage crosses over said two second output voltage levels, said second start and stop signals starting and stopping said counter to provide a second numerical count of N2 pulses; and,

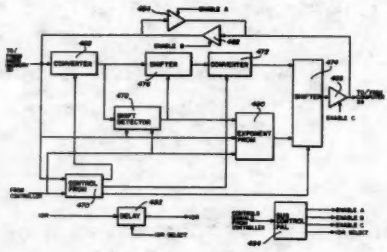
(h) means for dividing N1−N2 by N1+N2 to provide said numerical count, said differential operational amplifier means including an operational amplifier haveing a single ended input and ground terminals for receiving said analog signal and reference voltage signal, one of said first two output voltage levels constituting ground voltage level and the other the output from said operational amplifier when said analog signal is added to said reference voltage, and one of said second two output voltage levels constituting ground voltage level and the other the output level from said operational amplifier when said analog signal is subtracted from said reference voltage.

4,608,554

ASYNCHRONOUS PARALLEL FIXED POINT CONVERTER

Ron B. Blair, Louisville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 14, 1982, Ser. No. 417,978
Int. Cl.⁴ G06F *5/00*
U.S. Cl. 340—347 DD **5 Claims**



1. In a high speed data processing system having a host computer wherein fixed point parallel digital data is converted to floating point parallel digital data, a software configurable electronic circuit comprising:

slave means connected to said host computer for receiving control signals;

means connected to said slave means for delaying a control signal a predetermined time;

receiver means connected to said computer for receiving fixed point parallel digital data;

shift means connected to said receiver means for shifting said fixed point parallel digital data asynchronously;

calculate means connected to said shift means for simultaneously calculating an exponent due to a shift in said parallel digital data; and

output means connected to said calculate means for providing an output of said shifted digital data with said exponent.

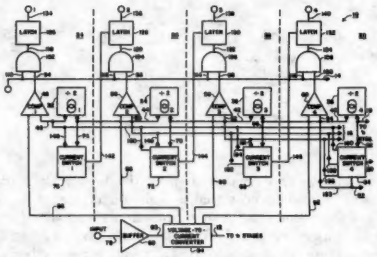
4,608,555

ANALOG TO DIGITAL FLASH CONVERTER

Werner H. Hoeft, 12746 Plymouth Dr., Saratoga, Calif. 95070

Filed Dec. 20, 1982, Ser. No. 450,929
Int. Cl.⁴ H03M *1/36*
U.S. Cl. 340—347 AD **18 Claims**

1. An analog to digital converter providing a multiple bit, parallel output arranged in more significant to less significant bits, comprising means for providing an analog input signal as a parallel input to each of a plurality of parallel converter stages, each of said stages converting said input to a bit of the output from said analog to digital converter, each of said converter stages other than a most significant stage including a comparator connected to receive the input from said analog signal providing means in equivalent form, means for providing a reference which is dependent on a state of more significant bit stages to the comparators of each of said converter stages, each dependent reference providing means having a divider connected to provide a first signal derived from the dependent reference of any next adjacent more significant bit converter stage having such a dependent reference to the comparator of its converter stage, and a switch, said dependent reference providing means also providing a second signal comprising the dependent reference of any next adjacent more significant bit converter stage having such a dependent reference to the switch, the switch of each converter stage being



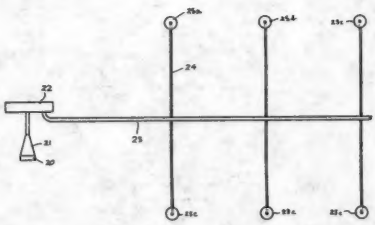
connected for selectively supplying the second signal to the comparator of its converter stage and to the comparators of any less significant bit converter stages, the divider of each converter stage further providing the first signal as an input to the divider of said dependent reference providing means of any next adjacent less significant bit converter stage, the comparator of each of said converter stages being connected to provide one output bit for said analog to digital converter and to control the switch of any next adjacent less significant bit converter stage for selectively supplying the second signal in that next adjacent less significant bit converter stage, said plurality of converter stages further being configured to carry out conversion of the analog input signal to a like plurality of parallel digital output bits from said converter simultaneously.

4,608,556

SMOKE DETECTION APPARATUS

Martin T. Cole, 29 Stafford Street, Huntingdale, Victoria, Australia

Filed Jul. 2, 1984, Ser. No. 626,706
Claims priority, application Australia, Jul. 4, 1983, PG0116
Int. Cl.⁴ G08B *19/00*
U.S. Cl. 340—628 **5 Claims**



1. In a smoke detector system including a sampling pipe which is connected to an associated smoke detection device, the improvement comprising:

an aperatured housing adapted for connection to said pipe at

a point on said pipe remote from the connection of said pipe to said associated smoke detection device;

plug means in said housing for controlling flow of ambient gaseous atmosphere to said sampling pipe such that under normal ambient conditions ambient gaseous atmosphere is blocked from said sampling pipe;

said plug means comprising a low melting point substance such that when the ambient temperature exceeds the melting temperature of said substance, said plug means becomes ineffective to block the flow of ambient gaseous atmosphere, and ambient gaseous atmosphere is admitted to said sampling pipe for exposure to said associated smoke detection device.

4,608,557

GRAPH-DRAWING MACHINE

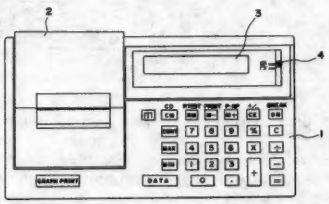
Yasuhiro Nakanishi, Nara, and Toshio Nishimura, Joyo, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 2, 1983, Ser. No. 528,846

Claims priority, application Japan, Sep. 10, 1982, 57-158393

Int. Cl.[4] G09G *3/00*

U.S. Cl. 340—715 **4 Claims**



1. A graph drawing machine for producing a graph from inputted numerical data, comprising:

key input means for inputting numerical data and control commands;

control means responsive to said key input means for storing and processing the numerical data in preparation for producing a graph according to inputted control commands on a record medium, said control means including

first memory means for storing numerical data input by the key input means;

second memory means for storing control command programs and machine function programs;

preset means for designating a preset top and bottom margin for graphing the inputted numerical data on said record medium, said top and bottom margins corresponding to maximum and minimum values, respectively, of said numerical data;

graphing means responsive to the key input means and the preset means for producing a graph from the inputted numerical data in which numerical data exceeding the preset values are printed in numerical form outside of said margins and not graphed;

printer means responsive to said control means and said preset means for printing a graph and said numerical data exceeding said preset values on said record medium; and

display means responsive to said key input means and said control means for displaying any of said numerical data.

4,608,558

ADDRESSING METHOD FOR A MULTIPLEXABLE, BISTABLE LIQUID CRYSTAL DISPLAY

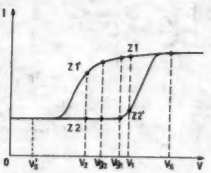
Hermann Amstutz, Mellingen; Meinolph Kaufmann, Baden, and Terry J. Scheffer, Forch, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 22, 1983, Ser. No. 534,715

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235143; European Pat. Off., May 24, 1983, 83105107.3; Sep. 14, 1983, 83201319.7

Int. Cl.[4] G09G *3/34*

U.S. Cl. 340—784 **16 Claims**



1. A method for addressing a multiplexable, bistable liquid crystal display having a plurality of liquid crystal display elements each of which can adopt a first optical state and a second state, comprising the steps of:

applying a writing voltage for a predetermined time period to at least one of said elements regardless of the optical state of said at least one of said elements;

applying a first driving voltage to said at least one of said elements after applying said writing voltage thereto when said at least one of said elements is to be put into or remain in the first optical state, said first driving voltage being greater than a first limiting voltage above which the second optical state spontaneously transforms into the first optical state; and

applying a second driving voltage to said at least one of said elements after applying said writing voltage thereto when said at least one of said elements is to be put in said second optical state, said second driving voltage being smaller than a second limiting voltage below which the first optical state spontaneously transforms into said second optical state, said second limiting voltage being less than or equal to said first limiting voltage;

wherein said writing voltage is selected to have a value outside a voltage range extending from said first driving voltage to said second driving voltage.

4,608,559

LOCAL MODULATED CARRIER DATA NETWORK WITH A COLLISION AVOIDANCE PROTOCOL

Michael S. Friedman, Irvine; Kenneth D. Thomas, Santa Ana, and Philip T. Chan, Fullerton, all of Calif., assignors to Computer Automation, Inc., Irvine, Calif.

Filed Aug. 19, 1982, Ser. No. 409,510

Int. Cl.[4] H04Q *9/00*

U.S. Cl. 340—825.5 **43 Claims**

1. An apparatus for detecting contentions for the transmission medium in a modulated carrier local data network having a plurality of transmitter and receiver modems, each modem comprising:

means for transmitting a non data bearing burst of energy, said burst being a sinusoidal radio frequency carrier having a fixed amplitude;

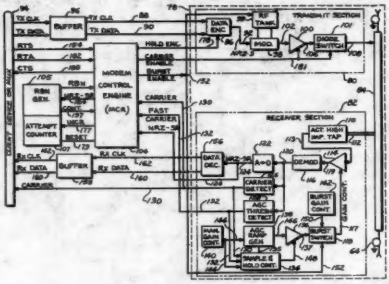
means for receiving signals on said transmission medium, said receiving means comprising:

a variable gain receiver coupled to said transmission medium to receive carrier energy and amplify it in accordance with said variable gain;

a demodulator for converting the received signal into a D.C.

signal which has an amplitude which varies with the amplitude of the output from said variable gain receiver;

a comparator means for comparing the output signal of said demodulator to a reference signal during said burst and for generating a contention signal when said D.C. signal achieves a predetermined relationship to said reference signal; and



a means for setting the gain of said variable gain receiver to a predetermined level during bursting such that the comparator means will not generate said contention signal unless interference beating with another carrier is causing the amplitude of the received signal to vary; and

means for preventing data transmission in response to detection by said receiving means of energy from any other modem while said burst is being transmitted.

4,608,560

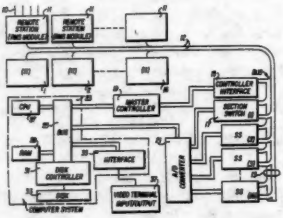
COMPUTER CONTROLLED ENERGY MONITORING SYSTEM

Marvin D. Allgood, Oxon Hill, Md., assignor to Adec, Inc., Oxon Hill, Md.

Division of Ser. No. 272,011, Jun. 9, 1981, Pat. No. 4,415,896. This application Oct. 5, 1983, Ser. No. 530,346

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 340—825.52 **15 Claims**



1. A remote station for selectively coupling one of a plurality of information channels to a central station comprising:

a first plurality of information channels;

a first communication channel for communicating with a central station;

means for detecting the presence of a clocking tone on said first communication channel and for providing a clocking signal upon the occurrence of each clocking tone;

means for presetting a predetermined remote station address;

means for counting said clocking signals and for providing an enable signal when the number of counted clock signals falls within a predetermined numerical range corresponding to said predetermined address;

means rendered operative by said enable signal and responsive to the counting of said clock signals by said counting means for selectively connecting a different one of said first plurality of information channels to said first communications channel upon the occurrence of each clocking signal which occurs while said enable signal is provided.

4,608,561

TIME DIVISION MULTIPLEXING LOAD CONTROL SYSTEM HAVING MANUAL SWITCH FOR DIRECTLY CONTROLLING LOADS

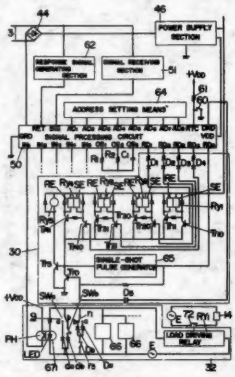
Yutaka Kojima; Toshiyuki Masuda, and Nobuo Hisamatsu, all of Mie, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 12, 1983, Ser. No. 531,502

Claims priority, application Japan, Sep. 20, 1982, 57-163561

Int. Cl.⁴ H04Q *1/00*

U.S. Cl. 340—825.52 **2 Claims**



1. A time division multiplexing load control system, comprising:

a central controller unit for generating, based upon input data accepted through an incorporated input device, output data signals, each of which includes at least an address receiving a response signal; and

a plurality of terminal units connected to the central controller unit, said central controller unit transmitting said output data signals sequentially and periodically to respective ones of said terminal units, each terminal unit responding to a corresponding address signal which accompanies each control signal and receiving said control signal to be controlled thereby and transmitting a response signal to the central controller unit in accordance with the control signal and the response-waiting signal, said output data signals and response signals being transmitted as time division multiplexing signals between the central controller unit and each of the terminal units;

at least one of the terminal units being provided with one or more associated load-switching circuits defining the associated terminal unit as being connected to one or more loads, each load-switching circuit comprising:

a latch-in load driving relay having a main contact for connecting and disconnecting the load and having a first changeover contact, two first contact members which are connected in said load-switching circuit respectively between said first changeover contact and two first diodes of opposite polarity which alternatively conduct to allow current to flow in a respective direction in said load-switching circuit;

reversing switch means connected between an AC power source and the load driving relay and having a second changeover contact, two second fixed contact members which are connected in said load-switching circuit respec-

tively between said second changeover contact and two second diodes of opposite polarity for responding to the control signal from the central controller unit to alternatively cause the conduction of said two second diodes to allow current to flow in a respective direction in said load-switching circuit;

manual switch means connected in parallel with said reversing switch means for operating said load-switching circuit independently of the function of said reversing switch means; and

a photocoupler detecting means including a light emitting diode connected in parallel with said current reversing switch means for emitting light in response to the current flowing in one direction in said load-switching circuit, and a photodetector which detects the emission of light and transmits a response signal representative of such emission to the central controller unit;

said load driving relay being responsive to a forward current flow through either of the two first diodes to move said main contact for connecting and disconnecting the load and at the same time to move the first changeover contact from one position to another position;

said reversing switch means futher including a normally open contact connected in series with said second changeover contact, both the normally open contact and the second changeover contact being controlled by said control signal from the central controller unit in such a way that the second changeover contact moves subsequent to the closing of the normally open contact and is kept latched in its last position, whereby said second changeover contact when moving to either of two positions thereof in response to the control signal causes a current to flow in either of two directions in said load-switching circuit through the first and second diodes which are arranged in the same direction until the first changeover contact is reversed by said current to prevent further current flow, said manual switch means further comprising a switch device for causing a current in the load-switching circuit to flow in a direction so as to actuate the load driving relay for turning on the load and for causing a current in the same circuit to flow in a opposite direction so as to actuate the load driving relay for turning off the load.

4,608,562

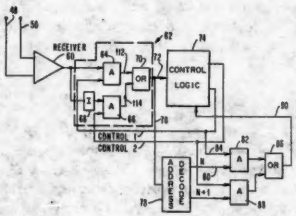
ADDRESS PERSONALIZATION OF A REMOTELY ATTACHED DEVICE

Richard G. Minor, and Alexander Polischuk-Sawtschenko, both of Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 31, 1983, Ser. No. 546,771

Int. Cl.[4] H04Q *9/00*

U.S. Cl. 340—825.59 **12 Claims**



1. A method for assigning unique addresses to identical devices connected by means of a serial communication link to a supervisory unit, said method comprising the following steps:

(a) generating a message;

(b) transmitting the message to each device with either a first or a second polarity;

(c) receiving the message at each of the identical devices;

(d) generating, in each device, a first control signal having a first polarity;

(e) combining the first control signal with the received message to form a first combined signal;

(f) reading the first combined signal; and

(g) assigning a first unique address to the devices capable of reading the first combined signal.

4,608,563

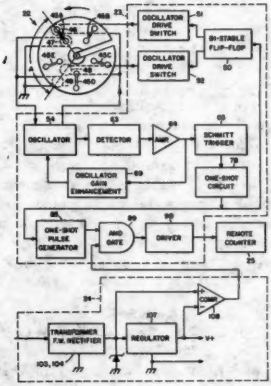
REMOTE MONITORING INDUCTION TELEMETERING SYSTEM

Gary R. Hoffman, Glen Arm, Md., assignor to General Services Engineering, Inc., Baltimore, Md.

Filed May 3, 1982, Ser. No. 374,626

Int. Cl.[4] G08B *23/00;* **G08C** *18/06*

U.S. Cl. 340—870.02 **19 Claims**



4. In an apparatus having a rotating shaft, a means for monitoring the position of the shaft, comprising, in combination, a wheel mounted on the shaft for conjoint rotation therewith, the wheel having five radially-projecting closed slots formed therein, the slots being equiangularly spaced around the circumference of the wheel, two pairs of inductors fixedly mounted in juxtaposition to the wheel, each inductor pair comprising a "sending" inductor and a "receiving" inductor, the inductors in each pair being spaced apart from one another along a radial axis, the respective axes of the inductor pairs being so arranged that whenever one inductor pair is aligned circumferentially with one of the closed slots, the other inductor pair will be located substantially equidistantly between a pair of slots, means for alternately energizing the sending inductors in the respective pairs of inductors, sequentially, whereby the inductors in a respective pair of inductors will be coupled together whenever one of the slots in the wheel is substantially aligned circumferentially with one of the inductor pairs, thereby generating a total of ten signals for each complete revolution of the wheel, and means including a remote counter responsive to said signals.

4,608,564

APPARATUS FOR THE REMOTE MONITORING OF METERS AND OTHER DEVICES

Gary R. Hoffman, Glen Arm, Md., assignor to General Services Engineering, Inc., Baltimore, Md.

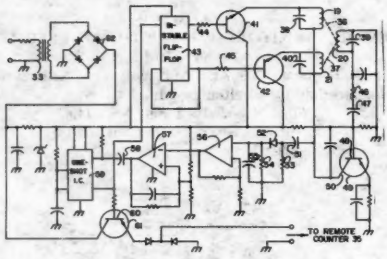
Filed Nov. 8, 1982, Ser. No. 439,921

Int. Cl.[4] G08S *23/00*

U.S. Cl. 340—870.02 **8 Claims**

2. In a meter having a panel provided with a plurality of dials, including a unit decade dial, and further having a rotating

shaft journaled in the panel concentrically within the unit decade dial, a remote monitoring apparatus comprising a disc made of a dielectric material and mounted on the shaft for conjoint rotation therewith, the disc being disposed forwardly of the panel, adjacent to the unit decade dial and substantially concentric thereto, an annular metallic rim mounted on the circumference of the disc, the rim having a plurality of spaced-apart arcuately-formed slotted apertures, a pair of inductors



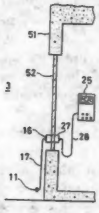
fixedly mounted on the meter radially of the rim, a third inductor fixedly mounted on the meter intermediately of the pair of inductors and common thereto, means for sequentially energizing one and the other of the pair of inductors, whereby a signal is generated in the third common inductor whenever one of the apertures in the rim bridges the third common inductor with one or the other inductors in the pair of inductors, circuit means responsive to the signal for generating a count, and means remote from the meter for registering the count.

4,608,565

INDOOR/OUTDOOR THERMOMETER WITH REMOTE SENSING UNIT

Tamaki Sakamoto, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 30, 1985, Ser. No. 729,167
Claims priority, application Japan, May 1, 1984, 59-86228
Int. Cl.[4] G01K *3/06*; G08B *13/24*
U.S. Cl. 340—870.17 **1 Claim**



1. A thermometer comprising:

temperature detecting means, including a temperature sensor, for detecting temperature;

carrier wave generating means for generating high frequency waves;

modulating means for modulating carrier waves delivered from said carrier wave generating means with output signals from said temperature detecting means into modulated output signals;

transmitting means including an antenna for converting the output signals from said modulating means into waves;

receiving means including an antenna for receiving said waves from said transmitting antenna;

demodulating means for demodulating the carrier waves and output signals from said modulating means received by said receiving means;

an A/D converter connected to said demodulating means for converting the output from said demodulating means; and

displaying means for displaying the output from said A/D converter;

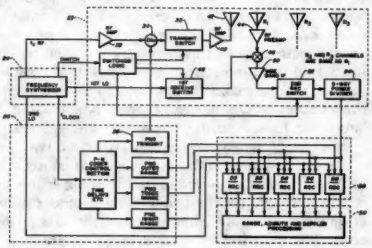
wherein said transmitting means and receiving means are disposed so as not to be in physical contact with each other and mounted on opposite sides of any one of a wall, partition and window so as to be located substantially adjacent each other.

4,608,566

FOLIAGE-PENETRATION SURVEILLANCE RADAR

David G. Ennis, and John M. Smith, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1981, Ser. No. 332,397
Int. Cl.[4] G01S *13/00*
U.S. Cl. 343—5 PD **4 Claims**



1. In a surveillance system of the type utilizing a radar system for the monitoring of moving objects within a perimeter of surveillance that includes trees and plants bearing foliage, the combination comprising:

transmitter means for transmitting a modulated RF signal to illuminate the area under surveillance,

receiver means for receiving reflections of said transmitted RF signal,

signal processing circuit means coupled to said receiver means for providing an output signal which indicates azimuthal direction of a detected target with respect to the radar site, said signal processing circuit means includes a first summing circuit for summing and sampling inbound signals and a second summing circuit for summing and sampling outbound signals and divider circuit means connected to each of said first and second summing circuits for dividing the sums by the number of samples taken which is proportional to the length of time the signal remains either positive or negative to prevent full cycle integration to remove clutter when the output signal is fluctuating back and forth between positive and negative polarities.

4,608,567

FAST ENVELOPE DETECTOR WITH BIAS COMPENSATION

Steve M. Bryant, Baltimore, and Lanier G. Cole, Crofton, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 22, 1984, Ser. No. 623,581
Int. Cl.[4] H03D *1/06*
U.S. Cl. 343—7 A **5 Claims**

1. In combination with a host radar system receiving echo return signals, an envelope detection system with bias compensation comprising:

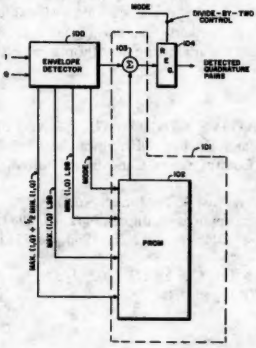
an envelope detector receiving said echo return signals from

said host radar system in the form of inphase and quadrature signal components and producing:

a first output signal being a biased envelope detection signal;

a second output signal being a mode select signal;

a third output signal indicating a minimum value of the inphase and quadrature signal component;



a fourth output signal indicating a maximum value of said inphase and quadrature signal component;

a fifth output signal equaling the sum of said fourth output signal plus one-half said third output signal; and

a bias compensation means receiving said first, second, third, fourth and fifth output signals from said envelope detector and producing an unbiased detection signal.

4,608,568

SPEED DETECTING DEVICE EMPLOYING A DOPPLER RADAR

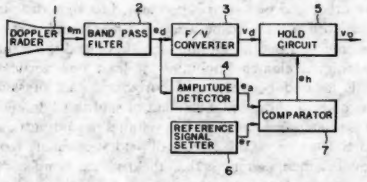
Akira Egawa, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,921

Claims priority, application Japan, Oct. 15, 1981, 56-164433; Oct. 19, 1981, 56-166869

Int. Cl.⁴ G01S *13/00, 13/58, 9/66*

U.S. Cl. 343—8 **12 Claims**



1. A speed detecting device having converting means for converting a Doppler signal obtained from a Doppler radar into a corresponding speed indicating signal, comprising:

reference signal setting means for setting a reference amplitude value;

amplitude detecting means for detecting the amplitude of said Doppler signal;

comparing means for comparing said reference amplitude value with the detected amplitude of said Doppler signal in order to identify as a comparison result those portions of said Doppler signal which are detected to be smaller in amplitude than said reference amplitude value; and

excluding means for excluding from said speed indicating signal corresponding to said Doppler signal those portions of said Doppler signal which are identified as said comparison result; and

wherein said setting means includes means for setting said reference amplitude value based on the relationship between a amplitude of the Doppler signal and the variance of a speed detection error.

4,608,569

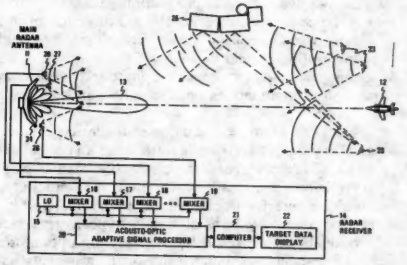
ADAPTIVE SIGNAL PROCESSOR FOR INTERFERENCE CANCELLATION

Frank R. Dickey, Jr., Dewitt, and William A. Penn, Baldwinsville, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,626

Int. Cl.⁴ G01S *3/86*

U.S. Cl. 343—384 **15 Claims**



1. A processor for use in an echo ranging or communication system in which a signal is received by a directional main antenna with possible interference including multi-path signals, said main antenna signal after conversion to a modulation on a carrier of intermediate frequency being denoted m(t); and in which system at least one auxiliary, substantially less directional antenna (i) is provided for intercepting interference, said auxiliary antenna signal after conversion to a modulation on said carrier being denoted $a_i(t)$, said processor generating a predicted interference signal $\hat{m}(t)$, modulated on said carrier at an appropriate phase and amplitude for interference cancellation, and effecting said cancellation, said processor comprising:

A. an optical time integrating correlator for deriving at least one correlation function (or weight) $W_i(x)$, where x is proportional to time delay, by correlating a residual signal r(t), approximating said main signal with the interference therein cancelled with each auxiliary signal $a_i(t)$ comprising:

(1) a source of quasi-coherent optical radiation in the visible or near visible spectrum,

(2) a first modulator for modulating said optical radiation with said residual signal r(t), said signal (r(t)) being of prescribed phase and amplitude in relation to said carrier,

(3) acoustic wave light modulation means to which said modulated light output is coupled and to which said auxiliary signals ($a_i(t)$) are coupled to excite acoustic waves, said modulation means providing point by point multiplications between said optical and acoustic waves to form a first spatial pattern of products

$$a_i\left(t-\frac{x}{v_a}\right)\cdot r(t)$$

where

x is a coordinate measured in the direction of propagation of said acoustic waves, and

v_a is the acoustic velocity in said acoustic wave light modulation means,

said first pattern retaining prescribed phase and amplitude signal information as modulations on said carrier in a spatial format,

(4) time-integrating means coupled to the output of said acoustic wave light modulation means, having a time constant adequate for executing a time integral of each point of said first spatial pattern to obtain at least one complex correlation function W(x), as a second spatial pattern,

$$W(x) = \int_{T_o} a_i\left(t - \frac{x}{v_a}\right) \cdot r(t)\, dt$$

where

T_o is 1/e decay time of integration, and

x is the coordinate measured in the direction of propagation of said acoustic waves, transformed to said time integrating optical means,

said second spatial pattern retaining phase and amplitude signal information as modulations on said carrier in said spatial format;

B. a space-integrating optical correlator for correlating each auxiliary signal ($a_i(t)$) while it traverses an optical aperture as an acoustic wave with said second spatial pattern of correlation functions (or weights) $W_i(x)$ to derive the predicted interference signal $\hat{m}(t)$, comprising:

(1) acoustic wave light modulation means to which said optical output of said time-integrating optical means is coupled and to which said auxiliary signals $a_i(t)$ are coupled to excite acoustic waves, said modulation means providing point by point multiplications between said optical and acoustic waves to form a third spatial pattern of products

$$a_i\left(t - \frac{x}{v_a}\right) \cdot W(x)$$

where

x is the coordinate measured in the direction of propagation of said acoustic waves, said third pattern retaining prescribed phase and amplitude signal information, as modulations on said carrier in a spatial format,

(2) a space integrating optical detector to which said third spatial pattern is coupled, said optical detector having adequate bandwidth to accommodate said modulated spatial carrier, said optical detector producing an output $\hat{m}(t)$

$$\hat{m}(t) = \sum_i \int_{x\Delta} a_i\left(t - \frac{x}{v_a}\right) W(x)\, dx$$

where

$x\Delta$ is the interval of spatial integration in which said predicted interference signal is converted from said spatial modulation back to a temporal modulation on said carrier, said predicted interference signal ($\hat{m}(t)$) approximating the interference in said main signal in respect to phase and amplitude, and

C. cancellation means in an adaptive feedback path for obtaining said residual signal r(t) as a modulation on said carrier, comprising:

(1) a bandpass filter whose input is coupled to the output of said optical detector for restricting the predicted interference signal $\hat{m}(t)$ to the useful signal band about said carrier, and

(2) subtraction means having an input coupled to said bandpass filter for application of said predicted interference signal $\hat{m}(t)$, said main signal m(t) being coupled to said other input, said subtraction means obtaining the complex difference denoted r(t), between the main carrier-borne signal m(t) and said predicted interference signal $\hat{m}(t)$, said difference (r(t)) being coupled to the first modulator, as earlier recited, to complete a feedback loop in which said predicted interference signal $\hat{m}(t)$ is caused to adaptively converge toward equality with the noise present in said main signal, said convergence causing said residual signal r(t) to approach equality to the main signal without said interference.

4,608,570

AUTOMOTIVE WINDOW GLASS ANTENNA

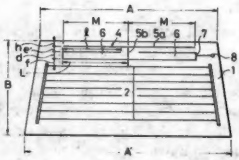
Hiroshi Inaba, and Kazuya Nishikawa, both of Mie, Japan, assignors to Central Glass Company, Limited, Yamaguchi, Japan

Filed Nov. 4, 1983, Ser. No. 548,799

Claims priority, application Japan, Nov. 18, 1982, 57-201025; Nov. 27, 1982, 57-206872; Apr. 25, 1983, 58-71418; May 14, 1983, 58-83515

Int. Cl.[4] H01Q *1/02, 1/32*

U.S. Cl. 343—704 **14 Claims**



13. An automotive window glass antenna having an antenna formed on a window glass pane of an automobile, said window glass antenna having an antenna pattern comprising in combination a first main antenna possessing a horizontal part and a vertical part to form a T-shape, a second antenna operative to effect phase compensation, said second antenna being disposed on one side of said vertical part of said first antenna and connected thereto, a third antenna operative to effect impedance matching, said third antenna being disposed on the other side of said vertical part of said first antenna and connected thereto, said third antenna comprising a horizontal element one end of which is connected to said vertical part of said first antenna and the other end of which is connected to an additional element which is positioned between said horizontal part of said first antenna and said horizontal element of said third antenna, said additional element including at least one vertical part which is located between said horizontal part of said first antenna and said horizontal element of said third antenna and which is spaced from and extends parallel to said vertical part of said first antenna, the length of said vertical part of said additional element being less than the distance along said vertical part of said first antenna between said horizontal part of said first antenna and said horizontal element of said third antenna, and a feed point connected to said additional element of said third antenna for connection via said additional element to each of said third, second and first antennas, said second and third antennas being asymmetric with respect to the vertical part of the first antenna.

4,608,571

COLLAPSIBLE PARABOLIC REFLECTOR

Robert A. Luly, 449 S. Sierra Way, San Bernardino, Calif. 92406

Filed Mar. 26, 1981, Ser. No. 247,922

Int. Cl.[4] H01Q *15/20*

U.S. Cl. 343—781 P **22 Claims**

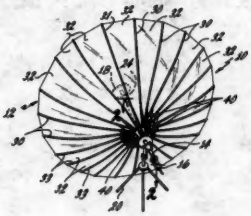
1. A reflector antenna comprising:

a wave guide having a front end and a rear end and being open at both ends to electromagnetic radiation;

a primary reflector at least partly supported by said wave guide for reflecting electromagnetic radiation towards said front end of said wave guide, said primary reflector including;

a pliable dish of substantially inelastic reflecting sheet material having a concave front surface and a convex rear surface;

a plurality of resiliently flexible normally straight spokes of tapering cross section mounted at their thicker ends to a central hub for pivotal movement between a folded axial position and a deployed radial position relative to said central hub, the cross-sectional taper of each spoke being such that the spoke is stressable to a particular curvature conforming to the curvature of said pliable dish;



means for attaching said plurality of radial spokes to said pliable dish such that said dish complies with the curvature of said spokes;

first means for simultaneously urging each of said radial spokes to aradially deployed postion; second means cooperating with said first means for stressing said spokes in said deployed position to said curvature thereby to conform with the curvature of said pliable dish, said stressed spikes thus deploying said dish to present a substantially smooth, concave front reflecting surface, said spokes being relieved of said stress in said folded position to thereby return to said normally straight condition;

lock means for releasably retaining said spokes in said stressed deployed position; and

a secondary reflector mounted to said front end of said wave guide for reflecting said radiation into said wave guide.

4,608,572

BROAD-BAND ANTENNA STRUCTURE HAVING FREQUENCY-INDEPENDENT, LOW-LOSS GROUND PLANE

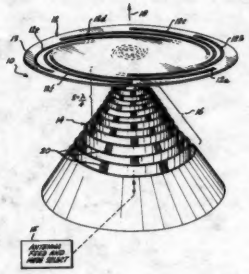
Thomas L. Blakney, Bellevue; Douglas D. Connell, Seattle; Bernard J. Lamberty, Kent, and James R. Lee, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 10, 1982, Ser. No. 448,511
Int. Cl.[4] H01Q *1/48, 1/36*
U.S. Cl. 343—792.5 **27 Claims**

1. An antenna structure comprising:

a directional, frequency-repeating, broad-band driven element arranged around an axis of antenna directivity and having excitation characteristics that vary with the radius from said axis, said excitation characteristics concentrating relatively higher signal frequencies in regions of said element proximate said axis, and concentrating progressively lower signal frequencies in regions of increasing radius from said axis out to a perimeter of said element;

a matching broad-band reflective ground plane formed around said axis and so arranged with said element that signal energy is reflected by said ground plane back toward said element generally along said axis, said ground plane having an array of circumferential chokes proximate said axis and matching the relatively higher signal frequencies of excitation on said element in said regions thereof proximate said axis, and said chokes on said ground plane progressively increasing in size with increasing radius so as to match the progressively lower frequencies of excitation at regions of said element of corresponding radius out to said perimeter of said element, said cir-



cumferential chokes limiting the inducement of radial currents on said ground plane; and

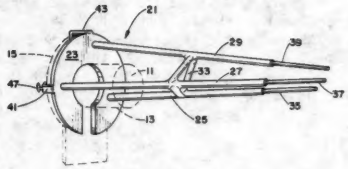
shunt means associated with said chokes for controlled shunting of radial currents on said ground plane.

4,608,573

FOCAL POINT POSITIONING TOOL

Dale Paullin, 1446 State Rte. 60, Ashland, Ohio 44805

Continuation of Ser. No. 586,342, Mar. 5, 1984, abandoned. This application Sep. 11, 1985, Ser. No. 774,991
Int. Cl.[4] H01Q *9/06*
U.S. Cl. 343—894 **25 Claims**



1. A tool for indicating the position of a receiving device relative to the focus of a convergent reflector, said tool comprising:

attachment for attaching the tool to a receiving device mounted on a convergent reflector having a focus; and,

an indicating means comprising at least two converging legs extending from said attachment means toward said reflector, and an extension means slidably disposed with respect to each of said legs for extension to said reflector to indicate the position of said receiving device with respect to said focus.

4,608,574

BACKFIRE BIFILAR HELIX ANTENNA

Carson W. Webster, Sykesville, and Robert K. Stilwell, Columbia, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

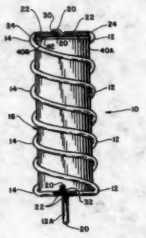
Filed May 16, 1984, Ser. No. 611,060
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—895 **8 Claims**

1. A backfire bifilar helix antenna having a pair of opposing spiral conductors for radiating or receiving a circularly polarized wave, comprising:

first and second coaxial cables helically wound in excess of one full turn in the same direction and having a predeter-

mined radius and constant pitch, said coaxial cables having a center conductor and a shield conductor, the shield conductors of said cables forming said pair of opposing spiral conductors;

infinite balun feed means for coupling signals of equal magnitude and 180° out of phase to one end of said first and second coaxial cables, said feed means including a transmission line comprising the center conductor and the



shield conductor of one of said coaxial cables, and wherein said center conductor of said transmission line is directly connected to the shield conductor of the other coaxial cable at said one end; and

means for adjusting the input impedance of the antenna to a predetermined value, said least mentioned means including identical tuned conductive surface layers directly connected to the shield conductors of said first and second coaxial cables at said one end.

4,608,575

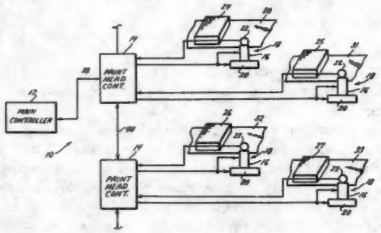
COMPUTER CONTROLLED MULTI-TASKING INK JET PRINTING SYSTEM

Eugene L. Morgan, Belleville, Ill., assignor to Printos Marsh Corporation, Belleville, Ill.

Continuation-in-part of Ser. No. 648,647, Sep. 7, 1984, abandoned. This application Oct. 26, 1984, Ser. No. 665,363

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—33 R **36 Claims**



1. A computer controlled ink jet printing system for printing messages on objects such as cartons or the like as they move along conveyor lines past printing stations, there being a plurality of print stations, said print stations being spaced one from the other, and one or more conveyor lines, said system comprising a plurality of print heads, at least one per print station, each print head having ink control means for discharging ink onto the objects as they move therepast in accordance with a programmed message, at least one print head control, each such print head control having means to control print heads of a plurality of stations, each print head control having means for controlling each print head it controls independently of others it controls, whereby said print head control controls the messages, including the parameters of product delay, dot size, and character width, printed by one print head at one station independently of the messages, including said parameters, printed by another print head at another station, and a main controller linked to said print head control, said main controller further comprising a programmable microprocessor, means for selecting messages for printing by each print head, and means for communicating said selected messages to said print head control, whereby said print head control independently controls print heads at each of a plurality of print stations to print onto the objects the messages selected at the main controller.

4,608,576

MULTI-PEN PLOTTER-PRINTER

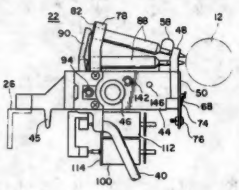
Ishio Shimashita, Hatano, and Yasuhiko Nishimura, Yokosuka, both of Japan, assignors to Ricoh Company, Ltd. and Ricoh Denshi Co., Ltd., both of Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,331

Claims priority, application Japan, Jun. 15, 1983, 58-91278 [U]; Jun. 15, 1983, 58-107344; Jun. 15, 1983, 58-107345

Int. Cl.[4] G01D *9/28, 15/16*

U.S. Cl. 346—49 **17 Claims**



1. A plotter-printer comprising:

a platen;

a carriage main body supported to be movable along said platen;

driving means for driving to move said carriage main body along said platen in a reciprocating manner;

a plurality of writing utensils mounted on said carriage main body in a predetermined arrangement, each of said writing utensils being normally held at a retracted position where no printing takes place and capable of being located at an advanced position when actuated where printing is effected on a recording medium on said platen;

actuating means for actuating said writing utensils selectively thereby having a selected one of said writing utensils located at said advanced position;

control means for controlling a relative positional relation between said plurality of writing utensils and said actuating means thereby allowing said actuating means to actuate said selected one of said writing utensils in said predetermined arrangement; and

a guide shaft which extends in parallel with said platen and on which said carriage main body is slidably supported wherein said actuating means is supported by said carriage main body as being relatively movable with respect thereto whereby said control means causes said actuating means to be temporarily motionless with respect to said guide shaft while said carriage main body moves along said guide shaft thereby changing the relative positional relation between said writing utensils mounted on said carriage main body and said actuating means.

4,608,577

INK-BELT BUBBLE PROPULSION PRINTER

Kenichi Hori, Tokyo, Japan, assignor to Elm Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1984, Ser. No. 653,870

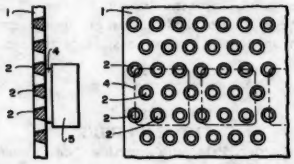
Claims priority, application Japan, Sep. 28, 1983, 58-178201

Int. Cl.[4] G01D *15/16, 15/10*

U.S. Cl. 346—140 R **9 Claims**

1. A printing machine comprising in combination: a thin film having first and second surfaces connected by a plurality of

hole or recess portions therein and movably positioned; an ink supplying means for supplying ink to said hole or recess portions; a thermal head member having a plurality of thermal head elements in contact with said first surface of said film; a driving circuit selectively driving said thermal head elements of said thermal head member; a recording paper feeding mechanism to feed recording paper adjacent said second surface of



said film; said ink filling said hole or recess portions, said thermal head element being selectively driven by said driving circut when one thermal head element corresponds to a plurality of holes or recesses of said film, whereby said ink is sprouted from a plurality of holes or recesses of said film to said recording paper by bubble pressure caused by heat from said thermal head element.

4,608,578

BRAKED MEDIA TRANSPORT FOR LASER SCANNERS

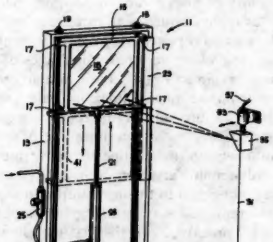
N. Balasubramanian, Saratoga, and Alan L. Helgesson, Mountain View, both of Calif., assignors to Matrix Instruments Inc., Orangeburg, N.Y.

Continuation-in-part of Ser. No. 551,266, Nov. 14, 1983, Pat. No. 4,505,578. This application Oct. 29, 1984, Ser. No. 665,746

The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.

Int. Cl.⁴ G01D *15/14*

U.S. Cl. 346—160 **20 Claims**



1. Apparatus comprising; carriage for moving a data recording or storage member relative to a laser beam, the carriage mounted for motion propelled by accelerative force, with its motion braked by a brake having a variable braking element,

means for measuring carriage velocity and having an output signal representing said carriage velocity,

servo control means for comparing said output signal representing velocity to a reference signal in order to generate a velocity error signal, and

a carriage brake actuator connected to receive said velocity error signal and connected to the variable braking element of the transport brake, the actuator being responsive to the velocity error signal in changing the variable braking element to reduce the velocity error signal.

4,608,579

THERMOSENSITIVE RECORDING MATERIAL

Keishi Taniguchi, Shizuoka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

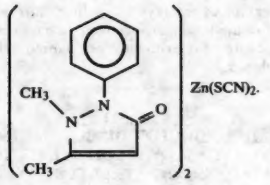
Filed May 22, 1985, Ser. No. 736,848

Claims priority, application Japan, May 25, 1984, 59-105781; May 31, 1984, 59-112006; Jun. 1, 1984, 59-112769; Sep. 11, 1984, 59-190225; Nov. 12, 1984, 59-237781; Mar. 1, 1985, 60-41722

Int. Cl.⁴ B41M *5/18*

U.S. Cl. 346—209 **10 Claims**

1. In a thermosensitive recording material comprising a colorless or light-colored coloring material, a color developer capable of inducing color formation in said colorless or light-colored coloring material upon application of heat thereto, and support means for supporting said coloring material and said color developer so that said color formation can be induced, the improvement wherein said coloring material is a leuco dye, and said color developer is a zinc thiocyanate antipyrine complex of the formula



4,608,580

HEAT-SENSITIVE RECORDING MATERIAL

Fukuji Ikeda, Takefu, and Toshiaki Takahashi, Sabae, both of Japan, assignors to Nikka Chemical Industry Company Ltd., Fukui, Japan

Filed Sep. 30, 1985, Ser. No. 781,949

Claims priority, application Japan, Oct. 8, 1984, 59-209768

Int. Cl.⁴ B41M *5/18*

U.S. Cl. 346—216 **3 Claims**

1. A heat-sensitive recording material comprising a support and, formed thereon, a heat-sensitive color-forming layer comprising a colorless or light-colored leuco dye as a color former and a phenolic compound as a color developer, wherein the color developer comprises 3,3'-diallyl-4,4'-dihydroxydiphenylsulfone as an effective ingredient.

4,608,581

SEMICONDUCTOR LIGHT EMITTER BASED ON GALLIUM NITRIDE AND PROCESS FOR MANUFACTURE THEREOF

Givi D. Bagratishvili, ulitsa Pavlova, 13, kv. 8; Rusudan B. Dzhanelidze, utlisa Belinskogo, 24; Vladimir V. Zorikov, ulitsa Klary Tsetkin, 137, kv. 13; Vissarion M. Mikhelashvili, Digomsky massiv, 6 kvartal, korpus 22a, kv. 28; Iosif E. Pekar, ulitsa Meunargia, 22; Rafael I. Chikovani, prospekt Vazha Pshavela, 51, 1 kvartal, 8 korpus, kv. 13; Manana A. Chkhaidze, ulitsa Ardeziani, 30; Svetlana Z. Akopova, ulitsa Tsutskiridze, 13, all of Tbilisi; Viktor B. Bogdanovich, ulitsa Uritskogo, 9, kv. 93; Sergei V. Svechnikov, ulitsa Vladimirskaya, 51/53, kv. 28, both of Kiev, and Revaz A. Charmakadze, prospekt Vazha Pshavela, 6 kvartal, korpus 24, kv. 22, Tbilisi, all of U.S.S.R.

PCT No. PCT/SU82/00002, § 371 Date Sep. 1, 1983, § 102(e) Date Sep. 1, 1983, PCT Pub. No. WO83/02685, PCT Pub. Date Aug. 4, 1983

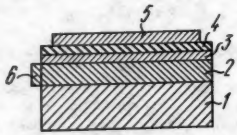
PCT Filed Feb. 2, 1982, Ser. No. 537,399

Int. Cl.⁴ H01L *33/00*

U.S. Cl. 357—17 **8 Claims**

1. A semiconductor light emitter based on gallium nitride

comprising a substrate of a single-crystalline material transparent within the visible range of spectrum, a layer of gallium nitride of n-type conductivity deposited on said single crystalline material, an overlapping layer of gallium nitride alloyed with acceptor dopes, and two metallic electrodes, one of which is supplied with a negative-polarity voltage and the other is supplied with a positive-polarity voltage, characterized by an insulating layer means for limiting the flow of large currents through low-ohmic regions of the layer of gallium nitride alloyed by acceptor dopes by providing complete insulation of the layer of gallium nitride alloyed by acceptor dopes low-ohmic regions of the layer of gallium nitride alloyed by acceptor, the insulating layer means including a layer of insulating material formed over the layer of gallium nitride alloyed by acceptor dopes.



4,608,582

SEMICONDUCTOR DEVICE HAVING NON-SATURATING I-V CHARACTERISTICS AND INTEGRATED CIRCUIT STRUCTURE INCLUDING SAME

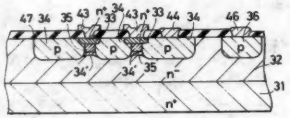
Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Miyagi, Japan

Continuation of Ser. No. 220,122, Dec. 24, 1980, abandoned, which is a continuation of Ser. No. 873,903, Jan. 31, 1978, abandoned. This application Jul. 20, 1983, Ser. No. 515,462

Claims priority, application Japan, Feb. 2, 1977, 52-10460; Feb. 15, 1977, 52-15880; Feb. 18, 1977, 52-17327; Feb. 24, 1977, 52-19466

Int. Cl.⁴ H01L *29/80*

U.S. Cl. 357—22 **23 Claims**



1. In a semiconductor device of the type including:

a current channel region including at least first and second relatively low impurity concentration semiconductor regions of different impurity concentrations;

low resistivity carrier injecting and low resistivity carrier extracting semiconductor regions of a first conducitivity type; and

low resistivity controlling semiconductor regions of a second conductivity type opposite to said first conductivity type provided adjacent to said current channel region and adapted to be applied with a controlling voltage,

said first semiconductor region of said current channel region being of the second conductivity type, and said second semiconductor region of said current channel region being of the first conductivity type,

the improvement wherein:

said first semiconductor region of said current channel region has an impurity concentration higher than that of said second semiconductor region of said current channel region and a thickness smaller than that of said second semiconductor region, and

said device includes means, comprising said channel first region, for generating a depletion layer extending across said current channel region and having a predetermined thickness in the direction of carrier movement in response to zero controlling voltage such that the current channel region is completely depleted at zero controlling voltage, and providing a potential barrier in the current channel region for charge carriers moving from said carrier injecting semiconductor region, the height of the potential barrier being capacitively controllable at least by the voltage applied to said carrier extracting semiconductor region, in a main operative state of the semiconductor device.

4,608,583

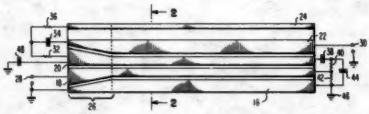
FET AMPLIFIER

Walter R. Curtice, Princeton Junction, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 497,158, May 23, 1983, abandoned. This application Oct. 2, 1985, Ser. No. 782,160

Int. Cl.⁴ H01L *29/80*

U.S. Cl. 357—22 **10 Claims**



1. A solid state transmission line, field effect transistor (FET) radio frequency amplifier, said amplifier having an input impedance and an output impedance, comprising:

a body of semiconductor material having at least one planar surface;

a layer of doped semiconductor material positioned on the planar surface;

a plurality of substantially parallel conductive lines formed on the layer of doped material;

the plurality of lines arranged on the doped semiconductor layer as radio frequency transmission lines with respect to each other to support at a given wavelength a wave travelling parallel to the longitudinal axes of said lines;

said lines having an input section and an output section and being arranged on said layer in spaced sequence, respectively, as a source line, a first rectifying gate line, a second rectifying gate line and a drain line of said FET;

said input section of said lines being formed into a tapered transmission line arranged to match the source impedance of an input signal to the input impedance of said amplifier;

a signal input means comprising two input terminals connected, respectively, to the first gate line and said source line of said tapered section, said source line being connected to ground;

a signal output means connected to said output section of said lines including two output terminals connected, respectively, to the drain line and ground of the output section of said lines; and

means for providing an RF ground connection to said second gate line for isolating RF signals on said drain line from RF signals on said first gate line.

4,608,584

VERTICAL TYPE MOS TRANSISTOR

Teruyoshi Mihara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 13, 1984, Ser. No. 620,290

Claims priority, application Japan, Jun. 13, 1983, 58-105544

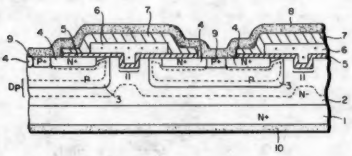
Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.4 **3 Claims**

1. A vertical type MOS transistor comprising:

a semiconductor substrate of a first conductivity type;

an upper region formed on the upper surface of the substrate in which are formed a source region of the first conductivity type, a well region of the second conductivity type opposite to the first conductivity type and a drain region of the first conductivity type, said source region, well region and drain region having portions thereof lying along a flat top surface of the upper region, the well region having a side perpendicular to said top surface and forming a channel region between the source and drain regions;



a stopper groove formed in the drain region spaced from and having no portion thereof in contact with the well region so that the flat top surface is interrupted by the groove;

a source electrode electrically connected to the source region;

a gate electrode formed on the channel region through an insulator film; and

a drain electrode formed on the lower surface of the substrate.

4,608,585

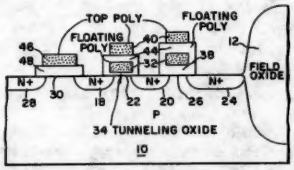
ELECTRICALLY ERASABLE PROM CELL

Parviz Keshtbod, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jul. 30, 1982, Ser. No. 403,694

Int. Cl.[4] H01L *29/78;* **G11C** *11/50*

U.S. Cl. 357—23.5 **14 Claims**



1. A memory device comprising:

a body of semiconductive material of a first conductivity type;

first and second regions of a second conductivity type opposite to the first conductivity type located in the body along its upper surface laterally spaced apart by a first channel region;

a third region of the second conductivity type located in the body along the upper surface laterally spaced apart from the second region by a second channel region having a higher doping of the first conductivity type than underlying adjacent material of the body;

an electrically conductive floating gate overlying the channel regions;

a first electrically insulating layer separating the floating gate from the channel regions and having a portion which overlies part of the first channel region and is thinner than the remainder thereof;

an electrically conductive control gate overlying the floating gate; and

a second electrically insulating layer separating the control gate from the floating gate and being of greater thickness than the thin portion of the first insulating layer.

4,608,586

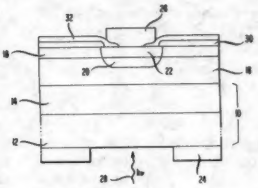
BACK-ILLUMINATED PHOTODIODE WITH A WIDE BANDGAP CAP LAYER

Ock-Ky Kim, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 11, 1984, Ser. No. 609,317

Int. Cl.[4] H01L *27/14*

U.S. Cl. 357—30 **11 Claims**



1. A back-illuminated photodiode comprising:

a semiconductor body of one conductivity type which is transparent to lightwaves to be detected,

a first electrical contact to said body adapted to permit said lightwaves to be incident on said body,

a light-absorbing layer of said one conductivity type formed on said body so as to absorb said lightwaves which are transmitted through said transparent body, thereby to generate electrons and holes in said light-absorbing layer,

a cap layer of said one conductivity type formed on the side of said light-absorbing layer remote from said body and having a wider bandgap than said light-absorbing layer,

a zone of opposite conductivity type extending through said cap layer and into said light-absorbing layer, thereby to form a junction for collecting said holes and electrons and generating a photocurrent, and

a second electrical contact to said zone.

4,608,587

SEMICONDUCTOR OPTOELECTRO TRANSDUCER

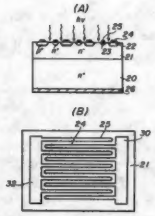
Jun-ichi Nishizawa, Sendai, Japan, assignor to "Semiconductor Research Foundation" , Japan

PCT No. PCT/JP82/00457, § 371 Date Jul. 29, 1983, § 102(e) Date Jul. 29, 1983, PCT Pub. No. WO83/02037, PCT Pub. Date Jun. 9, 1983

PCT Filed Nov. 30, 1982, Ser. No. 522,307

Int. Cl.[4] H01L *27/14, 31/00*

U.S. Cl. 357—30 **2 Claims**



1. A semiconductor optoelectro transducer comprising:

a high-resistivity semiconductor region of a first conductivity type having an impurity concentration on the order of $1\times10^{14}\,cm^{-3}$ to $1\times10^{16}\,cm^{-3}$ and predetermined dimension constituting at least one current channel having two ends;

a pair of current electrode means comprising low-resistivity semiconductor regions of said first conductivity type and connected to said two ends of said current channel for receiving a main voltage from an external voltage source;

control electrode means formed adjacent and surrounding said current channel for controlling current between said current electrode means, said control electrode means including a low-resistivity semiconductor storage region of a second conductivity type opposite to said first conductivity type and having a low resistivity as compared to the resistivity of said high-resistivity region and formed adjacent said current channel, said control electrode means being capable of storing charge carriers of the second conductivity type and thereby varying a potential thereof to control current between said current electrode means;

a resistor connected to said control electrode means for controlling photosensitivity;

light receiving means formed in the area of said current channel for introducing external light at least into part of said semiconductor region; and

at least one depletion layer formed in said semiconductor region extending from said control means to selectively pinch off said current channel due to said impurity concentration and predetermined dimensions, and forming a potential barrier in said current channel having a height in accordance with the potential of one of said current electrode means;

said current electrode means and said current channel being configured substantially perpendicular with respect to said semiconductor region.

4,608,588

SEMICONDUCTOR DEVICE MANUFACTURED BY USING A MULTILAYER MASK

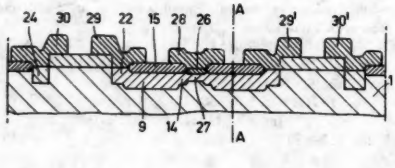
Michel X. M. de Brebisson, and Marc Tessier, both of Caen, France, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 361,957, Mar. 25, 1982, abandoned, which is a division of Ser. No. 139,932, Apr. 14, 1980, Pat. No. 4,368,573. This application Aug. 23, 1985, Ser. No. 768,190

Claims priority, application France, Apr. 20, 1979, 79 10086

Int. Cl.⁴ H01L *29/72*

U.S. Cl. 357—34 **7 Claims**



1. A semiconductor device in which an electrically insulating layer with a window therethrough lies along an upper surface of a first region of a semiconductor body wherein a second region of a first conductivity type extends to the upper surface within the window, a first zone of a second conductivity type opposite to the first conductivity type upwardly adjoins the insulating layer, a second zone of the second conductivity type upwardly adjoins the second region below the window, a third zone of the second conductivity type located apart from the second zone extends to the upper surface to serve as a contact zone, the zones and the insulating layer upwardly and laterally enclose the second region, and the first region excluding the zones and any oxidized portion thereof is of the first conductivity type, characterized in that a first segment of the first zone is continuous with the third zone and adjoins at least part of the lateral edge of the insulating layer located apart from the window and that a second segment of the first zone continuous with the first segment is continuous with the second zone, adjoins at least part of the lateral edge of the insulating layer located along the window, and has a sheet resistance much greater than that of the first segment.

4,608,589

SELF-ALIGNED METAL STRUCTURE FOR INTEGRATED CIRCUITS

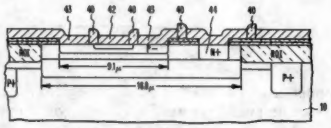
George R. Goth, Poughkeepsie; Ingrid E. Magdo, Hopewell Junction, and Shashi D. Malaviya, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 167,184, Jul. 8, 1980, Pat. No. 4,400,865. This application Jul. 11, 1983, Ser. No. 499,004

The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.

Int. Cl.⁴ H01L *29/72*

U.S. Cl. 357—34 **16 Claims**



1. A substantially planar, self-aligned integrated circuit structure comprising:

a silicon body having electrical devices therein with regions of said devices extending to the major surface of said body;

silicon dioxide regions within said body for isolating said electrical devices from one another;

a pattern of narrow dimensioned dielectric regions extending upward from said surface of said body, wherein the narrowest width dimension of said narrow dimensioned regions is less than about 1.5 micrometers; and

electrical contacts to said devices filling the spaces between said narrow dimensioned regions and which contacts are self-aligned to said narrow dimensioned regions and substantially planar with the tops of said narrow dimensioned regions.

4,608,590

HIGH VOLTAGE DIELECTRICALLY ISOLATED SOLID-STATE SWITCH

Adrian R. Hartman, New Providence, N.J.; Terence J. Riley, Wyomissing, Pa., and Peter W. Shackle, West Melborne, Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 248,192, Mar. 27, 1981, abandoned, Continuation-in-part of Ser. No. 107,774, Dec. 28, 1979, Continuation-in-part of Ser. No. 972,056, Dec. 20, 1978. This application Dec. 22, 1981, Ser. No. 333,461

Int. Cl.⁴ H01L *29/74*

U.S. Cl. 357—38 **7 Claims**

1. A switching element comprising a semiconductor body whose bulk is of one conductivity type and relatively high resistivity and which includes anode, gate, and cathode regions spaced apart and localized along a common planar surface of the body, each being of relatively low resistivity, the cathode and gate regions being of the opposite conductivity type as the bulk and the anode region being of the same conductivity type

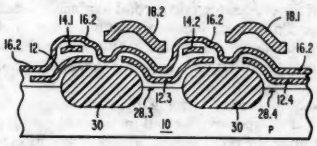
as the bulk, and separate cathode, anode, and gate electrodes, the parameters of the various portions of the switching element being such that with the anode region being forward biased with respect to the cathode region and the potential of the gate region being insufficient to essentially completely deplete a cross-sectional portion of the bulk of the semiconductor body between the anode and cathode regions there is facilitated a substantial current flow between the anode and cathode regions via the bulk, and with the anode region being forward biased with respect to the cathode region and the potential of the gate region being of sufficiently greater magnitude than that of the anode region to essentially completely deplete a cross-sectional portion of the bulk of the semiconductor body between the anode and cathode regions and to cause this portion of the bulk of the semiconductor body to be at a potential which is greater in magnitude than the anode region, there is facilitated an inhibiting or interrupting (cutting off) of current flow between the anode and cathode regions.

4,608,591

ELECTRICALLY ALTERABLE PROGRAMMABLE NONVOLATILE FLOATING GATE MEMORY DEVICE

Alfred C. Ipri, Princeton, and Roger G. Stewart, Neshanic Station, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 17, 1983, Ser. No. 523,921
Int. Cl.[4] H01L *29/34*; G11C *11/34*
U.S. Cl. 357—54 **8 Claims**



1. In an electrically alterable, nonvolatile floating gate memory device having a body of semiconductor material of a first conductivity type, a source region and a drain region of a second opposite conductivity type embedded in the body of semiconductor material and spaced one from the other to define a channel region, a conductive floating gate member insulated from the body of semiconductor material and having a portion thereof disposed over the channel region, a conductive word line, a conductive bit line and a conductive program line, the improvement which comprises:

the floating gate member and the word line being positioned over the semiconductor body with the floating gate member and the word line insulated from each other and substantially coincident with each other in one direction;

the bit line having a portion thereof in ohmic contact with the drain region and arranged to extend in a direction orthogonal with respect to the direction of the floating gate member and word line insulated therefrom; and

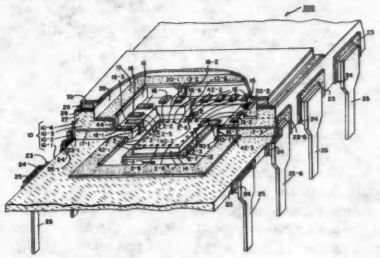
the program line being one in number and having a bidirectional conduction characteristic with respect to the floating gate member and arranged parallel to the bit line and extending in a direction orthogonal with respect to the direction of the floating gate memory and the word line.

4,608,592

SEMICONDUCTOR DEVICE PROVIDED WITH A PACKAGE FOR A SEMICONDUCTOR ELEMENT HAVING A PLURALITY OF ELECTRODES TO BE APPLIED WITH SUBSTANTIALLY SAME VOLTAGE

Takashi Miyamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 8, 1983, Ser. No. 511,935
Claims priority, application Japan, Jul. 9, 1982, 57-119306; Oct. 19, 1982, 57-183205
Int. Cl.[4] H01L *39/02*; H05K *5/00*
U.S. Cl. 357—80 **13 Claims**

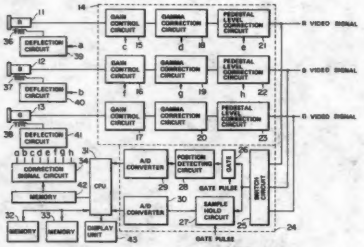


1. A semiconductor device comprising an insulating body constituted of first, second, third and fourth insulating sheets laminated into a unitary structure, said second insulating sheet having a first hole to provide a first horizontal surface on said first insulating sheet, said third insulating sheet having a second hole larger than said first hole to provide a second horizontal surface of an annular shape on said second insulating sheet, said fourth insulating sheet having a third hole larger than said second hole to provide a third horizontal surface of an annular shape on said third insulating sheet, a semiconductor chip mounted on said first horizontal surface and having a plurality of first electrodes supplied with the same voltage and a plurality of second electrodes, a plurality of first and second connection terminals made of metallized layers and formed on said second horizontal surface separately from each other, means for connecting said first electrodes of said semiconductor chip to said first connection terminals, means for connecting said second electrodes of said semiconductor chip to said second terminals, a first metallized wiring layer and a plurality of second metallized wiring layers buried in said insulating body, one end of said first metallized wiring layer being connected to one of said first connection terminals and one end of each of said second metallized wiring layers being respectively connected to said second connection terminals, the other ends of said first and second metallized wiring layers extending to an exposed surface of said insulating body, a first external lead attached to the other end of said first metallized wiring layer, a plurality of second external leads attached to the respective other ends of said second metallized wiring layers, a conductive layer formed on said third horizontal surface and extending along said third horizontal surface to provide an annular conductive layer, a plurality of conductive paths connecting said first connection terminals to said annular conductive layer, and a lid attached to said insulating body and closing said first, second and third holes thereby to provide a sealed space containing said semiconductor chip therein.

4,608,593
COLOR TELEVISION CAMERA APPARATUS WITH SELF-DIAGNOSIS FUNCTION

Yoshimori Miyaji, Tokyo; Hirokazu Fujiki, Asakusabashi, and Fumio Takahashi, Tama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 9, 1983, Ser. No. 550,044
Claims priority, application Japan, Nov. 30, 1982, 57-209623
Int. Cl.[4] H04N *5/225, 17/02*
U.S. Cl. 358—10 **10 Claims**



1. A color television camera apparatus with self-diagnosis function comprising:

detecting means for detecting adjustment data with respect to predetermined adjustment items from a video signal corresponding to a pattern on a test chart;

arithmetic operation means for calculating correcting data on the basis of the comparison of said adjustment data with reference data;

adjusting means for adjusting said video signal based on said correcting data;

variation data supplying means for supplying variation data;

modifying means for modifying said correcting data by said variation data to produce modified data;

supplying means for supplying said modified data to said adjusting means;

calculating means for calculating the difference between the video signal adjusted by said correcting data and the video signal adjusted by said modified data; and

judging means for judging whether said difference calculated by said calculating means falls within a predetermined allowable range.

4,608,594
TELEVISION RECEIVER USING NON-INTERLACED SCANNING FORMAT WITH MOTION COMPENSATION

Warren H. Nicholson, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 25, 1984, Ser. No. 614,310
Int. Cl.[4] H04N *9/78, 11/00*
U.S. Cl. 358—11 **11 Claims**

1. A television apparatus for generating from an incoming television signal first and second enhanced video signals such that the video lines thereof provide picture information for display in a non-interlaced television display, to form a picture frame, said apparatus comprising:

a first comb filter responsive to said incoming television signal for producing a first luminance signal and a first vertical detail signal, each derived from said incoming television signal;

a delay element for delaying said incoming television signal by substantially one field time thereof;

a second comb filter responsive to said field delayed television signal for producing a field delayed second luminance signal and a field delayed second vertical detail signal, eahc derived from said field delayed television signal;

a source for providing a motion indicating signal;

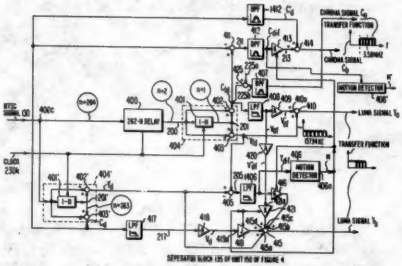
first combining means coupled to said first comb filter, to said second comb filter and to said source for combining portions of said first and second vertical detail signals and said motion indicating signal with said first luminance signal as a function of said motion indicating signal for generating said first enhanced video signal;

second combining means coupled to said second comb filter for combining said second vertical detail signal with said second luminance signal for generating said second enhanced video signal; and

means for displaying said first and second enhanced video signals in a non-interlaced television display.

10. Television apparatus, comprising:

filter means having an input for receiving a composite video input signal and having three outputs for providing, respectively, a first line-comb filtered luminance signal, a second line-comb filtered and field-delayed luminance signal, and a motion indicating signal;



first output signal forming means coupled to said filter means for selectively combining said motion signal with said first luminance signal as a function of said motion signal to form a first processed luminance output signal;

second output signal forming means coupled to said filter means for processing said second luminance signal to form a second processed luminance output signal; and

display means coupled to said output means for displaying said processed output signal in progressive scan fashion; and wherein

said first output signal forming means includes motion detector means responsive to said motion indicating signal for controlling the relative proportions of said motion indicating signal that are combined with said first luminance signal such that the proportion of said motion indicating signal increases for increases in magnitude of said motion indicating signal.

4,608,595
WHITE BALANCE CORRECTION FOR NEGATIVE-TO-POSITIVE CONVERSION

Yoshiaki Nakayama, Tokyo, and Masafumi Inuiya, Kaisei, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 16, 1984, Ser. No. 600,819
Claims priority, application Japan, Apr. 19, 1983, 58-67749
Int. Cl.[4] H04N *9/73*
U.S. Cl. 358—29 **2 Claims**

2. Negative-to-positive conversion apparatus for television signals, wherein an image recorded on a negative is picked up to be converted into a color composite video signal representative of a positive image associated therewith, comprising:

imaging means for picking up an image recorded on a negative to develop video signals representative of the negative image in the form of three color components;

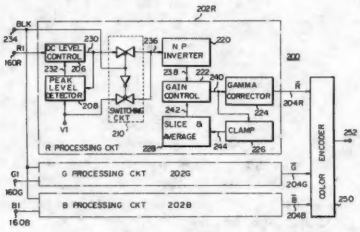
three processing means interconnected to said imaging means for processing respective ones of the three separated color signals; and

encoder means interconnected to said three processing means for combining output signals from said processing means to produce a color composite video signal representative of a positive image associated with the negative image;

each of said processing means including;

inversion means for inverting associated ones of the separated color signals;

maintaining means interconnected to said inversion means



for maintaining extreme values of a resultant inverted video signal at a first predetermined level; and

variable gain amplifier means for amplifying an output signal of said inversion means, said variable gain amplifier means varying a gain thereof in response to an integrated average value of portions of the inverted and maintained signal which are higher than a second predetermined level,

whereby said encoder means produces the color composite video signal with its luminance adjusted and white balance corrected.

4,608,596

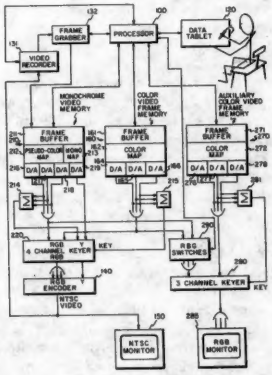
SYSTEM FOR COLORIZING VIDEO WITH BOTH PSEUDO-COLORS AND SELECTED COLORS

Lance Williams, Westbury, and Jules Bloomenthal, Glen Cove, both of N.Y., assignors to New York Institute of Technology, Old Westbury, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,656

Int. Cl.[4] H04N *1/46, 9/43, 9/74*

U.S. Cl. 358—81 **11 Claims**



1. A system for forming frames of color video signals, comprising:

means for deriving a monochrome video signal representative of a video frame;

a monochrome video frame buffer for storing said monochrome video signal;

a pseudo-color look-up memory responsive to the output of said monochrome video frame for generating a plurality of pseudo-color component signals;

means for deriving a luminance signal from the output of said monochrome video frame buffer;

means for generating operator-selected color component signals for operator-selected regions of pixels of a video frame;

a color video frame memory for storing said operator-selected color component signals for each pixel in the regions selected by the operator for colorization;

a video color encoder having a luminance input and a plurality of color component inputs, and an encoded color video output;

means responsive to color component signals output from said color video frame memory for generating a keying control signal;

a multichannel keying means, under control of said keying control signal, for receiving said pseudo-color component signals and the operator-selected color component signals and for selecting for coupling to the color component inputs of said video color encoder either said pseudo-color component signals or said operator-selected color component signals;

means for applying said luminance signal to the luminance input of said encoder; and

means for recording the output of said encoder.

4,608,597

METHOD FOR THE SURVEYANCE OF AN OBJECT SPACE

Walter Jaeger, Cureglia, Switzerland, assignor to GX-Holding AG, Basel, Switzerland

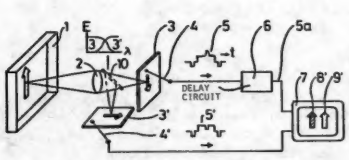
PCT No. PCT/CH83/00119, § 371 Date Jun. 29, 1984, § 102(e) Date Jun. 29, 1984, PCT Pub. No. WO84/01872, PCT Pub. Date May 10, 1984

PCT Filed Oct. 27, 1983, Ser. No. 629,543

Claims priority, application Switzerland, Nov. 2, 1982, 6357/82

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—113 **8 Claims**

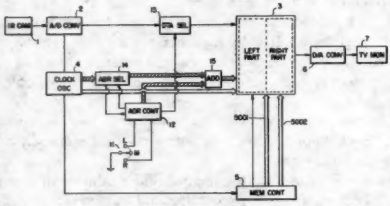


1. A method of monitoring a target space, characterised by projecting thermal infrared radiation of the target space by means of an infrared lens on to at least one infrared sensitive detector, forming an electrical signal sequence by constant scanning and passing this signal sequence in a specific colour directly to a colour TV and delayed and in another colour to the same monitor as an image of the object.

4,608,598
THERMAL IMAGING APPARATUS

Yoshishige Murakami, Yokohama; Takeshi Inoue, and Atsushi Tanaka, both of Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1984, Ser. No. 625,683
Claims priority, application Japan, Jun. 29, 1983, 58-117253
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—113 10 Claims



1. An imaging apparatus comprising

sensing means for providing image data of an observed object by scanning an instantaneous sensing field at a first speed across a total sensing field which includes said observed object,

a display means including a screen for displaying, at a second speed that is different from said first speed, a sensed image of said observed object according to said image data,

a digital semiconductor memory device for writing into respective memory elements at said first speed said image data from said sensing means, and for reading out data stored in said memory device at said second speed to said display means,

means for selectively determining said total sensing field of said sensing means so that said observed object is in a predetermined limited part of said total sensing field,

means for writing a limited part of said image data, corresponding to said limited part of said total sensing field, into a respective limited region of said memory device, and

means for subsequently writing at least one further one of said limited part of said image data, each corresponding to a respective sensed image of said object in said limited part of said total sensing field at a respective different time, at said first speed, into respective regions of said memory device, while maintaining the previously written at least one limited part of said image data, each said limited part of said image data corresponding to a respective thermal image to be simultaneously displayed, in respective limited parts of said memory device,

wherein a plurality of said sensed images corresponding to said plurality of said limited image data are read out from said memory device at said second speed for simultaneous display on said screen.

4,608,599
INFRARED IMAGE PICKUP IMAGE

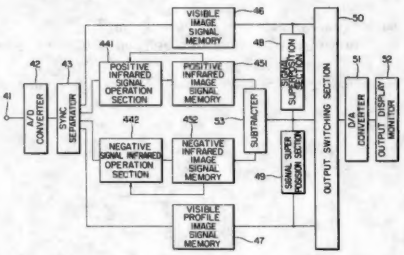
Akira Kaneko, Tokyo; Teruo Fumoto, Kanagawa, and Jun Nishida, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1984, Ser. No. 635,293
Claims priority, application Japan, Jul. 28, 1983, 58-138022; Aug. 29, 1983, 58-158347; Aug. 31, 1983, 58-159420
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—113 17 Claims

1. An infrared image pickup device comprising:

means for photographing an object to obtain one of at least an infrared image signal, a visible image signal and a visible profile image signal from an image pickup section in a time-division manner,

means for separating the visible image signal and visible profile signal, and

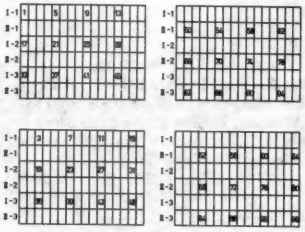


means for simultaneously displaying at least one of the visible image and visible profile image on at least one display monitor in a superposed manner or in a separate manner with the infrared image signal.

4,608,600
DIGITAL VIDEO SIGNAL TRANSMITTING APPARATUS

Hiroyuki Sugiyama, Isehara, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Apr. 16, 1984, Ser. No. 600,497
Claims priority, application Japan, Apr. 22, 1983, 58-71144
Int. Cl.[4] H04N 7/12
U.S. Cl. 358—138 6 Claims



1. A digital video signal transmitting apparatus comprising:

picture element data forming means for obtaining picture element data by subjecting an analog video signal to a digital pulse modulation;

transmitting picture element data producing means for successively producing for every one field period, picture element data which are located at different picture element positions in a picture for each one field period and amount to $\frac{1}{4}$ the number of picture element data amounting to one field, among the picture element data which are successively obtained from said picture element data forming means in each one field period among first, second, third, and fourth field periods;

transmitting means for transmitting through a transmission path a digital video signal in which the transmitting picture element data from said transmitting picture element data producing means are time-sequentially multiplexed;

a memory circuit into which said digital video signal obtained through said transmission path is written;

comparator means supplied with each of the picture element data making up said digital video signal as an input picture element data and supplied with one of said reproduced picture element data located at the same picture element position as said input picture element data, for comparing values of said input picture element data and said one of said reproduced picture element data so as to detect a

difference therebetween and for producing a detection signal indicative of said difference;

control circuit means for controlling a write-in to said memory circuit responsive to said detection signal from said comparator means, said control circuit means causing write-in of said input picture element data at the same write-in address in said memory circuit as said one of said reproduced picture element data when said detection signal indicates said difference to be essentially zero, and said control circuit means causing write-in of said input picture element data at the same write-in address as said one of said reproduced picture element data and at write-in addresses of the reproduced picture element data which are located in a vicinity of the picture element position of said input picture element data in the picture and amount to a number depending on said difference when said detection signal indicates said difference to be not essentially zero;

reproduced picture element data forming means for obtaining reproduced picture element data corresponding to one frame which are to be reproduced, by successively reading out the picture element data which amount to one field and were written into said memory circuit in said first through fourth field periods; and

reproduced analog video signal forming means for forming a reproduced analog video signal from the reproduced picture element data obtained from said reproduced picture element data forming means.

4,608,601

VIDEO RESPONSE TESTING APPARATUS

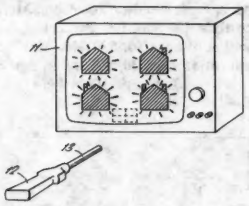
Peter K. Shreck, Truro, and John Dudding, Falmouth, both of United Kingdom, assignors to The Moving Picture Company Inc., Wilmett, Ill.

Filed Jul. 11, 1983, Ser. No. 512,490

Claims priority, application United Kingdom, Jul. 12, 1982, 8220181

Int. Cl.⁴ H04N *7/04, 7/08*

U.S. Cl. 358—146 **10 Claims**



1. Video response testing apparatus comprising video display apparatus including a display screen and for displaying video pictures on the screen, a generator for generating video signals, including a luminance signal, for display by the display apparatus of corresponding video pictures, the generator including picture area defining means for defining at least one selected area of the video picture represented by the video signals, modulation means responsive to the picture area defining means and arranged for modulating the luminance signal of the video signals, to alternately raise and lower the luminance level represented by the luminance signal in said at least one selected area without destroying the original luminance signal spacial variations across said area, whereby the original picture content in said area represented by said original luminance signal spacial variations is not destroyed, encoding means controlling the modulation means to raise and lower said luminance level in accordance with a desired binary code, the rate of alternate raising and lowering of said luminance level and the selection of code formats being such as to make the code visually undecipherable when viewed on the display screen, and a sensing probe including a photo sensitive element, the probe being positionable to enable the element to respond to variations in picture brightness in said selected area on the display screen and including decoding circuitry arranged to decode the binary code represented by said variations to provide decoded data.

4,608,602

CIRCUIT FOR GENERATING A CONTROL SIGNAL FOR THE FIELD DEFLECTION IN A PICTURE DISPLAY DEVICE

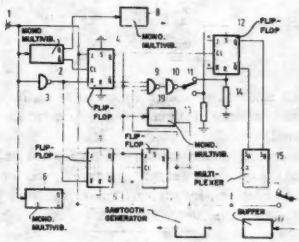
Timothy R. Grantham-Hill, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1984, Ser. No. 649,093

Claims priority, application Netherlands, Sep. 30, 1983, 8303347

Int. Cl.⁴ H04N *5/04, 5/10*

U.S. Cl. 358—148 **5 Claims**



1. A circuit for generating a control signal for field deflection in a picture display device, comprising an input for receiving a composite synchronizing signal intended for controlling the display of an interlaced picture, a field identification circuit connected to the synchronizing signal input for producing a first field signal on receipt of a first field and a second field signal on receipt of a subsequent second field, the second field signal deviating from the first field signal, and an address generator coupled to the field identification circuit for generating signals for controlling the transfer of the control signal, formed by said first and second field signals, for the field deflection, characterized in that the circuit further comprises a signal selection circuit coupled to the field identification circuit and the address generator for receiving said first and second field signals and for setting the sequence in which the first and second field signals occur in said control signal appearing at an output thereof.

4,608,603

MICROPROCESSOR DRIVEN VIDEO GENERATOR

Brion Johnson, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 18, 1983, Ser. No. 514,872

Int. Cl.⁴ H04N *5/45*

U.S. Cl. 358—183 **18 Claims**

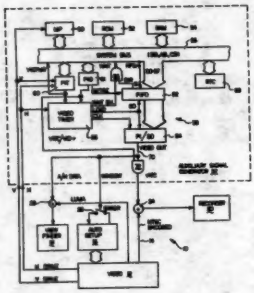
1. Apparatus for use in conjunction with a television camera which generates a video-related signal and which includes adjustment circuitry for adjusting camera operation in accordance with said video-related signal, comprising:

gate means for gating said video-related signal to said adjustment circuitry, said gate means being controlled by a window signal so as to gate only selected portions of said video-related signal to said camera adjustment circuitry, and

window signal generating means for generating said window signal, said window signal generating means comprising memory means for storing said window signal, means for reading said stored window signal from said memory means in synchronism with said video-related signal, and

means for applying the resulting window signal to said gate means;

said memory means comprises a digital memory for storing a bit pattern representative of said window signal, and wherein said reading means comprises means for reading out said bit pattern in bit serial fashion and in synchronism



with said video-related signal so as to thereby generate a serial stream of binary bits representing said window signal;

said reading means comprises means for receiving words from said memory means in parallel, and means coupled to said receiving means for converting said parallel words into said serial stream of binary bits.

4,608,604

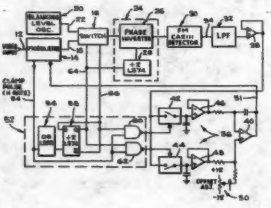
CIRCUIT FOR REDUCING AFC OFFSET ERROR

Martin A. Lilley, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 8, 1983, Ser. No. 483,325

Int. Cl.[4] H04N *5/21, 5/44*

U.S. Cl. 358—188 **14 Claims**



1. A circuit for reducing offset errors in a modulated RF signal detected by FM detector means, comprising:

means for supplying a blanking level signal;

switching means for combining the blanking level and the modulated RF signals to define a switched RF signal;

means coupled to the switching means for selectively inverting the phase of the switched RF signal at a selected rate; and

means for integrating the subsequent detected signal from the FM detector means at a second selected rate to define an output signal with minimal offset errors.

4,608,605

IMAGE SENSING APPARATUS

Tadashi Okino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1984, Ser. No. 678,223

Claims priority, application Japan, Dec. 6, 1983, 58-230269; Dec. 20, 1983, 58-241235

Int. Cl.[4] H04N *5/30*

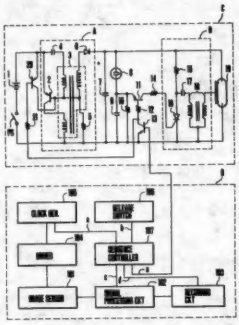
U.S. Cl. 358—209 **21 Claims**

1. An image sensing apparatus, comprising:

illuminating means including electric energy accumulating means, said illuminating means being arranged to illuminate an object to be photographed with an electric energy accumulated by said electric energy accumulating means;

charging means for charging said electric energy accumulating means;

image sensing means arranged to convert an image of said object illuminated by said illuminating means into an electrical signal;



signal processing means for processing the output of said image sensing means; and

control means arranged to bring the operation of said charging means to a stop in relation to the processing operation of said signal processing means performed on the output of said image sensing means which corresponds to the image of said object illuminated by said illuminating means.

4,608,606

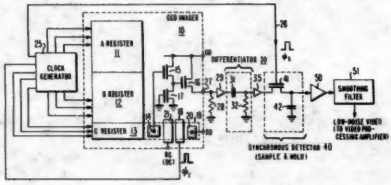
CCD FLOATING-ELEMENT OUTPUT STAGES PROVIDING LOW RESET NOISE WITH SINGLE SAMPLING

Peter A. Levine, West Windsor Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 590,044, Mar. 15, 1984. This application Dec. 30, 1985, Ser. No. 815,662

Int. Cl.[4] H04N *5/34*

U.S. Cl. 358—213 **11 Claims**



1. In combination:

a charge coupled device operable as a shift register having a charge transfer channel,

a succession of clocked gate electrodes across said charge transfer channel,

a floating element for sensing charge in a portion of sid charge transfer channel following said succession of clocked gate electrodes,

an electrometer stage having said floating element at an input connection thereof and supplying with attendant flicker noise output signal samples at an output connection thereof responsive to the charge sensed by said floating element,

means responsive to reset pulses for clamping said floating element to a prescribed potential for the duration of each reset pulse,

a drain in said charge transfer channel following said floating element, and

means for introducing charge packets under selected ones of said clocked gate electrodes;

means for applying clocking signals to said clocked gate electrodes at a clocking frequency, or rate, in appropriate phases to transfer charge packets through said charge transfer channel towards said drain following said floating element;

a differentiation with respect to time circuit having an input connection from the output connection of said electrometer stage and having an output connection for supplying response to the output signal samples from said electrometer stage, in which response at least the lower frequencies of the baseband spectrum of output signal below a corner frequency are suppressed to reduce flicker noise arising in said electrometer stage;

a synchronous detector having an input signal connection to the output connection of said differentiation circuit, having a carrier signal connection, and having an output connection from which synchronously detected signal is supplied;

means for applying pulses at said clocking frequency to said carrier signal connection of said synchronous detector; and

means for reducing reset noise in the synchronously detected signal which means includes

means for applying reset pulses to said means for clamping, application being at times preceding each admission of charge under said floating element for sensing, which times are each substantially as long as the reciprocal of said corner frequency in radians per unit of time.

4,608,607

DATA COMPRESSION DEVICE FOR PICTURE PROCESSING APPARATUS

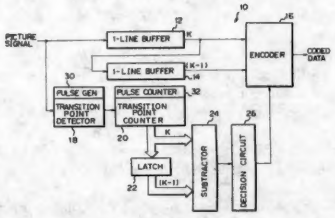
Eiichi Adachi, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 617,207

Claims priority, application Japan, Jun. 15, 1983, 58-105772

Int. Cl.⁴ H04N *1/44*

U.S. Cl. 358—260 **9 Claims**



1. A data compression device for redundancy reduction coding picture signals, comprising:

(a) transition point detector means for detecting transition points of picture signals associated with two adjacent scanning lines;

(b) transition point counter means for counting the detected transition points of the picture signals;

(c) calculator means for producing an absolute value of a difference between the counted numbers of transition points of the respective picture signals;

(d) decision means for comparing said calculated absolute value with a predetermined value to select an adequate coding mode; and

(e) encoder means for selectively performing a one-dimensional mode coding operation and a two-dimensional mode coding operation in response to a result of the selection by said decision means.

4,608,608

SOLID-STATE IMAGING SYSTEM WITH SMEAR SUPPRESSION CIRCUITS

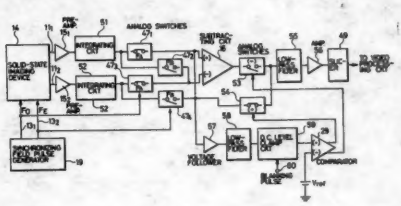
Shigeki Nishizawa, and Tetsurou Izawa, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,312

Claims priority, application Japan, Nov. 30, 1983, 58-224118; May 18, 1984, 59-98694

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213 **6 Claims**



1. An imaging system comprising:

a photo-electric converter;

a subtracter for subtracting a noise component from the sum of signal and noise components;

a comparator for detecting whether said sum of signal and noise components exceeds a predetermined value; and

a control circuit for preventing the overaction of the subtraction of said noise component from said sum signal and noise components in response to the output of said comparator.

4,608,609

APPARATUS FOR RECORDING A COLOR VIDEO SIGNAL

Masayuki Takano, and Kenji Nakamura, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,558

Claims priority, application Japan, Aug. 20, 1982, 57-145100

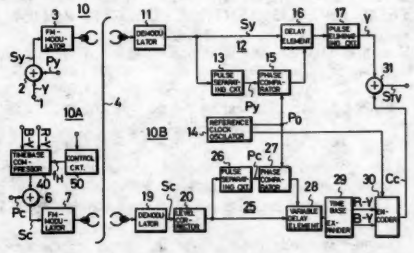
Int. Cl.⁴ H04N *5/782*

U.S. Cl. 358—320 **6 Claims**

1. Apparatus for recording a color video signal having a horizontal frequency f_H in which a luminance signal and a chrominance signal are recorded on separate channels and at least two chrominance component signals are compressed in timebase and arranged alternately and sequentially for recording on the track as said chrominance signal; said apparatus comprising:

clock signal generating means for generating a write clock signal having a frequency $N \cdot f_H$ and a read clock signal having a frequency $m \cdot N \cdot f_H$, where N and m are integers;

timebase compressing means for writing said chrominance component signals in response to said write clock signal and reading them out in response to said read clock signal, whereby the timebases of said chrominance component signals are compressed to 1/m; and



switching means for alternately selecting said chrominance component signals with the timebases compressed by said

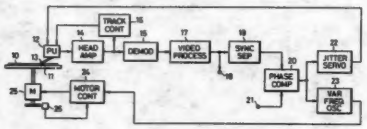
timebase compressing means ane arranging said chrominance component signals alternately.

4,608,610

JITTER COMPENSATION SYSTEM IN ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Kazuo Tatsuguchi, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 21, 1981, Ser. No. 295,232
Claims priority, application Japan, Aug. 22, 1980, 55-115377; Aug. 22, 1980, 55-115378
Int. Cl.⁴ H04N 9/44
U.S. Cl. 358—324 **6 Claims**



1. A jitter compensation system in a reproducing apparatus having a motor for rotating a rotary medium with video signals recorded thereon, and a reproducing transducer including an element for reproducing said recorded video signal from said rotary recording medium, said jitter compensation system comprising:

separation means for separating a horizontal synchronizing signal having a first phase from the video signal reproduced by said reproducing transducer;

means for supplying a first reference signal having a second phase;

phase comparing means for comparing the phases of said separated horizontal synchronizing signal and the first reference signal to produce a first phase comparison error signal;

means for displacing the reproducing element of said reproducing transducer along a relative scanning direction with respect to said rotary recording medium, in response to the output error signal of said phase comparing means;

variable frequency oscillating means responsive to the first phase comparison error signal of said phase comparing means, for controlling the output oscillation frequency, said variable frequency oscillating means producing a second reference signal;

detection means for detecting the rotational phase of said motor; and

control means for comparing phases of outputs of said variable frequency oscillating means and said detection means and for producing a second phase comparison error signal, to control the rotation of said motor responsive to said second phase comparison error signal.

4,608,611

COLOR VIDEO SIGNAL RECORDING AND/OR REPRODUCING SYSTEM USING OVERLAP RECORDING OF FM LUMINANCE SIGNAL OVER FREQUENCY CONVERTED CARRIER CHROMINANCE SIGNAL

Yoshihiko Ota, Yokohama, Japan, assignor to Victor Company of Japan, Japan

Filed Oct. 31, 1983, Ser. No. 547,105
Claims priority, application Japan, Nov. 2, 1982, 57-192955
Int. Cl.⁴ H04N 9/80
U.S. Cl. 358—328 **6 Claims**

1. A color video signal recording system comprising:

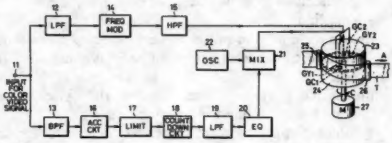
separating means for separating a luminance signal and a carrier chrominance signal from an input color video signal;

frequency modulating means for frequency-modulating a carrier by the luminance signal which is separated in said separating means, and for producing a frequency modulated luminance signal;

frequency converting means for frequency-converting the carrier chrominance signal which is separated in said separating means into a frequency range which is lower than a band occupied by said frequency modulated luminance signal, and for producing a low-band converted carrier chrominance signal;

a first pair of head gaps mounted on a rotary body in a rotational plane of said rotary body, said first pair of head gaps having mutually different azimuth angles, each of said first pair of head gaps having a first track width;

a second pair of head gaps mounted on said rotary body in the same rotational plane of said rotary body, said second pair of head gaps having mutually different azimuth angles but respectively having the same azimuth angles as the first pair of head gaps, each of said second pair of head gaps being mounted at locations lagging each of said first pair of head gaps by a predetermined distance along a rotating direction of said rotary body, each of said second pair of head gaps having a second track width which is



larger than said first track width, a pair of head assemblies being respectively formed by two head gaps of the same azimuth angle amoung the first and second pairs of head gaps, said pair of head assemblies being mounted diametrically on said rotary body; and

recording means for carrying out recording with respect to a recording medium which is caused to travel in a state where said recording medium is wrapped around a peripheral surface of said rotary body,

said recording means first recording said low-band converted carrier chrominance signal from said frequency converting means on a first track by one of said first pair of head gaps and thereafter recording said frequency modulated luminance signal from said frequency modulating means on a second track by one of said second pair of head gaps,

said second track having a track width which is larger than a track width of said first track and being formed over said first track is an overlapping manner with a track pitch which is at least larger than the track width of said first track,

said second track width of said second pair of head gaps being selected to a value which is equal to or larger than said track pitch,

said predetermined distance being selected equal to a length of said recording medium which is required to record a signal corresponding to an integral multiple of a horizontal scanning period.

4,608,612

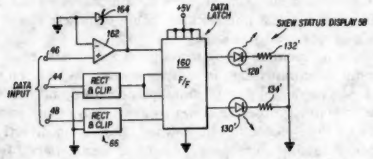
CONDITION MONITORING SYSTEM FOR MAGNETIC TAPE UNIT

Earl H. Rayfield, 4649 Glanmire Dr., Virgina Beach, Va. 23464

Filed Feb. 26, 1985, Ser. No. 705,642
Int. Cl.⁴ G11B 20/20
U.S. Cl. 360—26 **17 Claims**

1. In combination with a magnetic tape unit having at least three read heads aligned in a direction transverse to a path of travel of a tape from which data bits are read on parallel tracks to produce corresponding outputs transmitted by separate data channels, a condition monitoring system including means connected to one of the data channels for converting the output thereof into a reference signal, logic means connected to the data channels for detecting time displacement of the outputs in the two other of the data channels relative to the reference

signal in said one of the data channels and skew indicating means connected to the logic means for registering the outputs in said data channels, the improvement comprising means for selecting said two other of said data channels from from which the outputs are opposite in direction relative to the reference



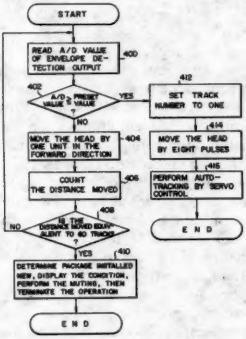
signal and means responsive to said detection of time displacement for limiting registration of the outputs to one of the data channels reflecting angular misalignment of the heads relative to one of the heads from which the reference signal is derived.

4,608,613

TRACKING APPARATUS FOR ROTARY MAGNETIC RECORDING MEDIUM

Izumi Miyake, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 31, 1985, Ser. No. 739,665
Claims priority, application Japan, May 31, 1984, 59-109584
Int. Cl.[4] G11B *5/55*
U.S. Cl. 360—78 **8 Claims**



1. A tracking apparatus for a rotary magnetic recording medium comprising:

magnetic head means for sensing signals from a plurality of tracks which are formed on the rotary magnetic recording medium in such a manner that the front end of recording operation continues positionally to the last end thereof;

head moving means for movably supporting said magnetic head means;

control means for controlling said head moving means to move said magnetic head means onto a desired one of said plurality of tracks so as to perform a tracking operation; and

first detector means for detecting an envelope of signals sensed by said magnetic head means;

said control means, in order to cause said head moving means to move said magnetic head means from a reference position to a track next to the reference position monitoring a level of said envelope detected by said first detector means each time said head means has traveled a first predetermined distance;

said control means further controls said head moving means, so that when the envelope level monitored exceeds a predetermined value, said control means moves said magnetic head means from the position at which said predetermined value is detected by a second predetermined distance;

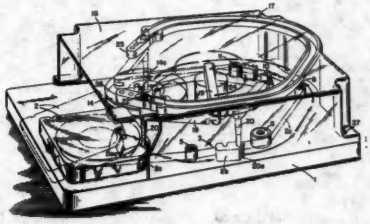
wherein said second predetermined distance is set to substantially correspond to a distance between a peak position of an envelope waveform of signals recorded on the magnetic recording medium and a position at which said predetermined value is detected.

4,608,614

APPARATUS FOR THREADING MAGNETIC TAPE IN A MAGNETIC TAPE TRANSPORT

Helfried O. Rinkleib, and William J. Rueger, Tucson, both of Ariz., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,629
Int. Cl.[4] G11B *15/00, 15/32*
U.S. Cl. 360—95 **3 Claims**



1. A tape drive providing a tape path including a READ/-WRITE transducer assembly for processing data on a tape comprising:

a base member;

a takeup reel supported for rotation on said base member at the end of said tape path, said takeup reel having a central hub including a slot extending through said takeup reel axis of rotation for receiving a leader block;

a cover member enclosing said base member, said cover member having an opening for inserting along said base member a magnetic tape cartridge, said cartridge including along a leading edge thereof a frontal opening exposing a leader block;

a curved cam track located on said cover member facing said base, said cam track beginning at a first end over said cartridge and substantially following said tape path to a second end over said takeup reel;

first and second nests terminating respective ends of said cam track, said nests having track extension portions connected by hinge means to said track ends which permits said second nest to be angularly adjusted with respect to said takeup reel rotational axis to accurately position the leader block in the takeup reel slot, and permitting said first nest to be angularly adjusted with respect to said cartridge frontal opening, said nests including means for fixing each nest in a respective angular position;

a longitudinal leader block engaging member having at one end a cam follower for riding in said cam track, and at the remaining end a tapered point for engaging a cutout in said leader block;

an arm including first and second pivotally connected linkage members, the first of said linkage members connected to be rotated about an axis interior to said curved cam track, the second of said linkage members connected to said leader block engaging member; and

a drive means for rotating said first linkage member in first and second opposite rotational directions;

whereby rotation of said first arm linkage member in a first direction forces said cam follower into said first nest engaging said tapered point into said leader block cutout, and rotation of said first arm linkage member in a second direction threads said leader block over said tape path into said takeup reel slot in a position determined by said second nest.

4,608,615

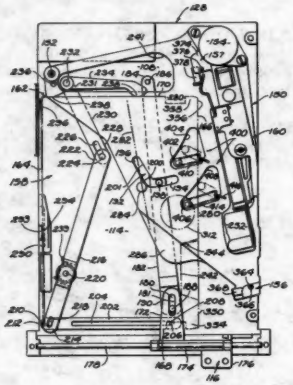
HALF HEIGHT DATA CARTRIDGE TAPE DRIVE

Mark Zeavin, 27 E. Las Flores Dr., Altadena, Calif. 91001

Filed Apr. 30, 1984, Ser. No. 605,715

Int. Cl.[4] G11B *21/02, 15/00*

U.S. Cl. 360—96.5 57 Claims



1. A data cartridge tape drive for receiving a cartridge, the cartridge having a magnetic tape therein and a front edgewall with a door in the front edgewall of the cartridge, said door being selectively openable to allow access to the magnetic tape therein for writing and reading onto the magnetic tape, the cartridge further having a side edgewall, the cartridge tape drive comprising:

a housing with a baseplate extending generally along a first plane and having a cartridge insertion port for receiving the cartridge thereunto, side edgewall first, the cartridge thereafter remaining substantially stationary until removed through the carriage insertion port;

a deck mounted to the baseplate and pivotal in a plane generally parallel to the first plane between an engaged position and a disengaged position the deck positioned for engaging and aligning the substantially stationary cartridge upon pivotal movement into the engaged position;

a magnetic head fixedly mounted on the deck for pivotal movement therewith;

an engagement level coupled to the deck for movement of the deck between the engaged and disengaged positions in response to movement of the engagement lever, the magnetic head being brought into data communicating relationship to the magnetic tape in the cartridge when the deck is pivoted into the engaged position.

4,608,616

TAPE CASSETTE HAVING A LOCK MECHANISM FOR LOCKING A TAPE PROTECTING LID

Yoshiaki Wakui, Tokyo, and Hiroyuki Umeda, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Dec. 2, 1983, Ser. No. 557,279

Claims priority, application Japan, Dec. 8, 1982, 57-185541[U]; Dec. 13, 1982, 57-188352[U]; Dec. 13, 1982, 57-188353[U]

Int. Cl.[4] G11B *23/02, 15/32;* B65D *45/16*

U.S. Cl. 360—132 5 Claims

1. (Amended) A tape cassette comprising:

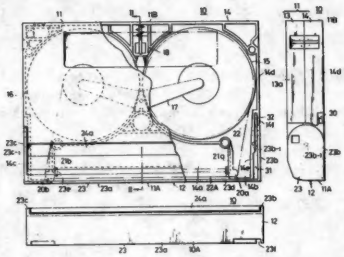
a cassette case made up from an upper half and a lower half which are connected together, said cassette case having a pair of side wall portions which are provided on a side wall of said upper half;

a tape accommodated within said cassette case, said tape being in a predetermined tape path along the front of said cassette case when the tape cassette is not in use;

a tape protecting lid located at the front of said cassette case, said tape protecting lid being closed to cover said tape in said predetermined tape path when the tape cassette is not in use, and being open so as not to interfere with an operation in which said tape is drawn out of said cassette case when the tape cassette is in use; and

a lock mechanism for locking said tape protecting lid in its closed position when the tape cassette is not in use, said lock mechanism comprising a locking member which is rotatable about a pin, said pin being disposed across said pair of side wall portions,

said locking member being made from a synthetic resin, and unitarily comprising an engaging part which engages with an engaging part of said tape protecting lid when the latter is in its closed position so as to restrict the rotation of said tape protecting lid toward an opening direction, a lock releasing arm portion which forms part of said locking member so that a lock release member of a recording and/or reproducing apparatus releases the engagement between said engaging part of said lock mecha-



nism and said engaging part of said tape protecting lid when the tape cassette is loaded into the recording and/or reproducing apparatus, a resilient arm portion which is in engagement with a part of the side wall of said upper half, said resilient arm portion undergoing resilient deformation and urging said engaging part of said lock mechanism in a direction so as to engage with said engaging part of said tape protecting lid when said tape protecting lid is closed and restricting the rotational position of said locking member with respect to said upper half when said upper half is connected to said lower half, and a projecting portion which engages with an overhanging sidewall portion of said lower half when said upper half is connected to said lower half, and temporarily connects said upper and lower halves in place with respect to each other so that said upper and lower halves do not separate.

4,608,617

MAGNETIC RECORDING DISK CARTRIDGE

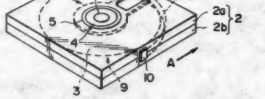
Kengo Oishi, and Tuyoshi Ono, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Odawara, Japan

Filed Aug. 9, 1983, Ser. No. 521,544

Claims priority, application Japan, Aug. 18, 1982, 57-124627[U]

Int. Cl.[4] B11B *23/02*

U.S. Cl. 360—133 3 Claims



1. A magnetic recording disk cartridge comprising a recording disk having a circular flexible recording medium and a hub, having an axis and a peripheral surface, secured to the central portion of the recording medium, and a casing, having a base

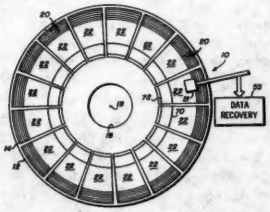
wall, in which the recording disk is accommodated, the casing being provided with a hub opening, at the center of the base wall, for permitting means for rotating the recording disk to have access to the hub and a magnetic head receiving opening extending radially outwardly from the hub opening for giving a magnetic head access to the recording medium, in which said hub is provided with a plurality of axially extending engaging grooves on the peripheral surface thereof, said base wall of the casing is provided with a plurality of projecting walls spaced from each other along the periphery of the hub opening to surround the hub, said projecting walls being disposed substantially perpendicularly to said base wall, said projecting walls having an inner perimeter and an outer perimeter, and a hub locking device is provided in the casing to releasably lock the hub to prevent rotation of the recording disk and to close the magnetic head receiving opening when the cartridge is not in use, the hub locking device comprising a hub locking member having an annular bearing portion which slidably engages the outer perimeter of said projecting walls, said locking member being rotatable about the outer perimeter of said projecting walls, a shutter portion integrally extending from the bearing portion and an engaging portion formed integrally with the bearing portion to resiliently project toward the hub, and an operating member for swinging the hub locking member about the central axis of the hub between an operative position in which said shutter portion closes the magnetic head receiving opening and said engaging portion projects toward the hub through the space between the adjacent walls and within the inner perimeter of said projecting walls to engage with the engaging grooves of the hub, and an inopertive position in which said shutter portion is retracted from the magnetic head receiving opening to open it and said engaging portion is disengaged from the engaging grooves of the hub whereby the disk is free to rotate about said axis.

4,608,618

DIGITAL ALIGNMENT DIAGNOSTIC DISK

Ronald M. Sturtevant-Stuart, San Francisco, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Oct. 25, 1984, Ser. No. 664,580
Int. Cl.[4] G11B *5/58, 21/10*
U.S. Cl. 360—135 **7 Claims**



1. In an alignment disk comprising a disk substrate, a magnetic recording layer overlaying said disk substrate and suitable for recording a plurality of separate tracks, the improvement comprising:

a plurality of spiral tracks recorded on said magnetic recording layer for testing a plurality of parameters of a transducer head of a disk drive, each of said spiral tracks including a continuous series of individual address blocks containing unique identifying information and extending across at least two ANSI standard format recording tracks, said address blocks being radially spaced in increments less than one half of a standard ANSI track width, said plurality of spiral tracks including;

a spiral alignment track for checking alignment of a transducer head;

a clamping spiral track, including a plurality of address blocks, which are arrayed about at least two ANSI standard track locations so as to cross each track at least twice, said clamping spiral address blocks being radially spaced relative to each other to a greater degree than said spiral alignment address blocks; and

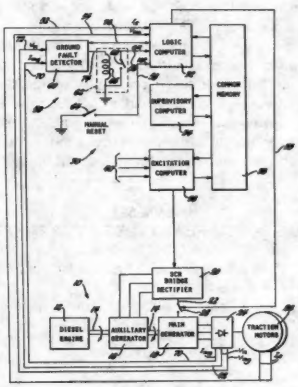
a bordered spiral track including a first spiral arrangement of address blocks extending radially inwards towards a disk center and crossing at least two ANSI standard track locations, and further including a pair of border tracks, arrayed on either side of said first spiral track of address blocks, said border spiral tracks including address blocks containing information adapted to interfere with a reading of a plurality of data encoded onto said center spiral track whereby a disk drive electronic data recovery circuit may be analyzed.

4,608,619

GROUND FAULT VOLTAGE LIMITING FOR A LOCOMOTIVE ELECTRIC TRACTION MOTOR

Michael O. Bomer, Country Club Hills, and Richard F. Chudoba, Downers Grove, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 18, 1985, Ser. No. 712,783
Int. Cl.[4] H02H *7/08*
U.S. Cl. 361—31 **10 Claims**



1. For a locomotive system wherein operating voltage is supplied to the locomotive traction motor in accordance with operator demand up to a voltage limit having a maximum value determined in relation to the motor design limits, and wherein the motor voltage supply is temporarily interrupted in response to the sensing of a motor ground fault and permanently interrupted after a number of such temporary interruptions, apparatus for preventing a permanent interruption of motor voltage due to moisture induced ground faulting, comprising:

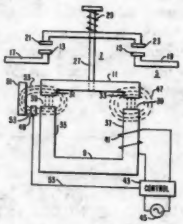
limit setting means effective in response to each sensing of a ground fault for reducing said voltage limit to a level determined in relation to the voltage supplied to said motor just prior to the occurrence of the ground fault, and further effective following each of said temporary interruptions of motor voltage supply for incrementing the voltage limit toward said maximum value whenever the motor is continuously operated for a second predetermined time interval with no ground faults, whereby when the sensed ground fault is moisture induced, the voltage limit reductions permit continued motor operation following the temporary interruption of motor voltage, and the voltage limit is returned to said maximum value as the heat generated by such continued motor operation dries the moisture which induced the ground fault.

4,608,620

MAGNETIC SENSOR FOR ARMATURE AND STATOR

George Hines, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 14, 1985, Ser. No. 798,257
Int. Cl.[4] H01H *47/22*
U.S. Cl. 361—154 5 Claims



1. A magnetic sensing device comprising:

a stator having an energizing coil for inducing a magnetic field;

an armature movable between open and closed positions of the stator and forming a gap between the armature and stator when in the open position;

shunt means spaced from the armature and stator for transferring a magnetic field therebetween;

a magnetic sensing device between the shunt means and one of the stator and armature for monitoring the magnetic field and for producing a resulting voltage; and

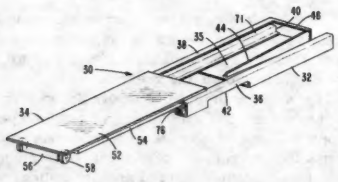
control means responsive to the voltage produced by the device for controlling the power applied to the coil, so as to reduce power to the coil in response to a reduced magnetic field when the gap is closed.

4,608,621

TRANSPORT APPARATUS FOR ELECTRICAL EQUIPMENT

Warren W. Porter, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 14, 1985, Ser. No. 701,845
Int. Cl.[4] H02B *1/20*
U.S. Cl. 361—428 5 Claims



1. In the assembly of housing members each containing electrical equipment and positioned in a side-by-side arrangement in which electrical cables interconnecting the electrical equipment extend adjacent the bottom surfaces of the housing members, an apparatus movably supporting a housing member comprising;

a first elongated support member which includes a pair of side wall portions each having a cut-out portion positioned along the lower edge of the side wall portions in which are located electrical cables interconnecting the housing members of the assembly and extending in a direction transverse to the longitudinal axis of the first support member, said side wall portions each include a roller support surface extending in a longitudinal direction along the upper edge of the side wall portions of the support members;

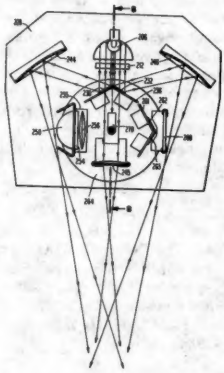
and a second elongated support member supporting a housing member, said second support member includes a pair of roller members secured to one end of the second support member and a pair of cam roller members located at the opposite end of the second support member and positioned on said roller support surfaces enabling the second support member to slide on said first support member whereby the housing member supported on said second support member is moved in a direction enabling the housing member to be removed from the assembly without engaging the cables located in said cut-out portion and interconnecting other housing members of the assembly.

4,608,622

MULTI-FUNCTION LIGHT SOURCE

Donald I. Gonser, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Continuation-in-part of Ser. No. 566,235, Dec. 28, 1983, Pat. No. 4,516,195. This application Dec. 14, 1984, Ser. No. 681,324
Int. Cl.[4] F21V *7/04*
U.S. Cl. 362—32 17 Claims



1. Light apparatus, having a light source generating light directed substantially along an axis, including:

delivery means mounted for movement relative to said light source and having a plurality of operative positions selectable for delivering light to a given target by a selected one of a plurality of delivery modes due to said movement, including beam means for deriving at least one beam mode of light from said source and delivering said beam of light to said given target, and light pipe means for collecting light from said source and delivering said collected light to said given target, and

selecting means for operatively selecting the mode of operation of said delivery means so as to cause it to deliver at least one of said modes of light.

4,608,623

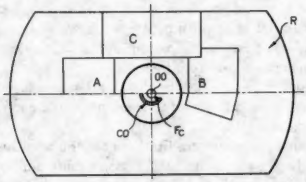
AUTOMOBILE HEADLAMP WITH INCLINED FRONT GLASS

Marc Stephano, Livry Gargan, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Mar. 2, 1984, Ser. No. 585,822
Claims priority, application France, Mar. 8, 1983, 83 03764
Int. Cl.[4] F21M *3/18;* F21V *5/02*
U.S. Cl. 362—80 11 Claims

1. A headlamp of an automobile, comprising at least one light source, at least one reflector co-operating with the light source in order to reflect a beam of light rays substantially

parallel to an optical axis and an imaginary central vertical plane containing said axis, an inclined front glass located in the path of said light rays, the glass being formed, in certain critical zones, with prism elements arranged to disperse laterally the light rays, said prism elements being inclined by an angle α with respect to said central vertical plane, whereby the vertical



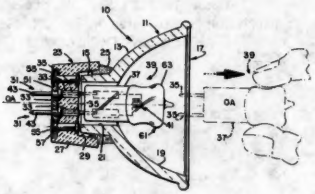
deflection effect caused by the inclination of the glass is compensated, the active surface of each prism element being defined by the intersection of a prism surface having an angle β at its apex and a part-cylindrical rib whose axis is parallel to the inclination α of said prism element, whereby the vertically compensated light rays are merged together.

4,608,624

PROJECTION LAMP UNIT WITH SEPARABLE LAMP CAPSULE

Ronald G. Blaisdell, Saugus, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 22, 1985, Ser. No. 693,566
Int. Cl.[4] H01R *33/00*
U.S. Cl. 362—226 **10 Claims**



1. A projection lamp unit comprising:

a reflector having a concave reflecting portion defining a forward opening and a rear, neck portion defining a rear opening therein;

a socket member fixedly secured to said reflector relative to said rear opening within said rear neck portion thereof;

first and second electrical contacts, each of said contacts including a female receiving portion spacedly positioned within said socket member and having an aperture therein and a male pin portion extending from said socket; and

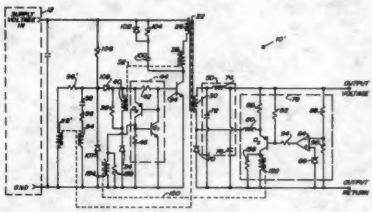
a lamp removably positioned within said socket member through said forward opening of said reflector, said lamp including an envelope for being located substantially within said concave reflecting portion of said reflector when said lamp is fully inserted within said socket member, said envelope including a sealed end portion and a protruding rim portion to enable said envelope to be manually grasped and removed from said socket member through said forward opening of said reflector, and first and second pins projecting from said sealed end portion of said envelope, said first and second pins being located within said apertures within said female receiving portions of said first and second contacts, respectively, in a substantially frictional manner to provide positive electrical connection between said contacts and said pins and alignment of said envelope relative to said concave reflecting portion when said lamp occupies said fully inserted position within said socket member.

4,608,625

CURRENT DRIVEN FLYBACK POWER SUPPLY

Elliot Josephson, Los Altos, and Frederick S. Parker, Ben Lomand, both of Calif., assignors to Astec Components, Ltd., Santa Clara, Calif.

Filed Apr. 27, 1983, Ser. No. 489,263
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 **7 Claims**



1. A flyback power supply for developing an output DC voltage from a source of DC, said power supply comprising:

a power transformer including a primary winding and a secondary winding;

current switch means for periodically coupling a primary current during a first interval of time through said primary winding from said source, whereby energy is stored in said transformer during said first interval, said primary current having an increasing amplitude during each said interval;

means for developing a drive current whose amplitude is a function of said primary current and for coupling said drive current to said current switch means, said current switch means being responsive to said drive current for enabling said current switch means to remain on;

pulse-width modulation means for developing a feedback pulse at a point in time after said current switch means turns on as a function of the deviation of said output voltage from a predetermined voltage;

electrical switch means for turning off said current switch means in response to said feedback pulse, said energy stored in said transformer being transferred out through said secondary winding when said current switch means is off during a second interval of time;

means responsive to said energy transferred out through said secondary winding during each said second interval for developing said output DC voltage;

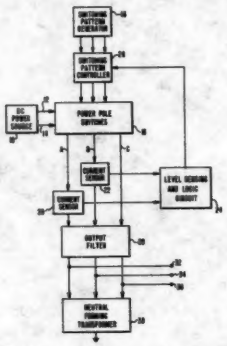
means for developing a first current pulse when all of said stored energy has been transferred out through said secondary winding, said first current pulse being applied to said current switch means to initiate coupling of said primary current through said primary winding, said current pulse developing means including a feedback winding of said power transformer and a capacitor in series with said feedback winding, said feedback winding applying a voltage to said capacitor when said stored energy has been transferred out through said secondary winding to charge said capacitor, said capacitor emitting said current pulse while being charged by said voltage; and

a first resistor coupled between said secondary winding and said capacitor for charging said capacitor during said second interval of time, said current pulse developing means developing a second current pulse for application to said current switch means at a selected point during said second interval when said capacitor has been charged to a voltage sufficient to turn on said current switch means.

4,608,626
ELECTRICAL INVERTER WITH MINORITY POLE CURRENT LIMITING

David A. Fox, Shawnee Township, Gallatin County, and Donal E. Baker, American Township, Allen County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 9, 1984, Ser. No. 670,420
Int. Cl.[4] H02H 7/122
U.S. Cl. 363—56 8 Claims



1. A current limiting circuit for an inverter including three output power poles which are capable of being alternatively switched between a first DC voltage level and a second DC voltage level, wherein each of said power poles is connected to an output phase conductor, said current limiter circuit comprising:

means for producing a signal representative of the current magnitude in each output phase conductor;

means for comparing each signal with a reference voltage level;

means for generating a switching waveform pattern for each of said power poles;

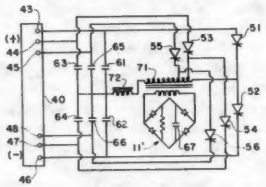
means for determining the DC voltage level of the minority power pole; and

means for altering said switching waveform patterns, when one of said signals exceeds the reference voltage level, such that all switching waveform patterns cause their associated power poles to switch to the DC voltage level of the minority power pole.

4,608,627
NON-DISSIPATIVE CURRENT DISTRIBUTION CIRCUIT FOR MAGNETOHYDRODYNAMIC GENERATOR ELECTRODES

James F. Holt, Medway, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 20, 1985, Ser. No. 746,902
Int. Cl.[4] H02M 3/315, 3/337
U.S. Cl. 363—131 44 Claims



1. A converter circuit for a power source delivering output current through more than one pair of electrodes, said circuit providing predetermined current distribution among said electrode pairs, comprising:

a. a pair of capacitors of respective predetermined sizes connected in series circuit relationship and first and second controlled rectifiers connected in series circuit relationship from each positive to each negative electrode of each electrode pair, each pair of said rectifiers connected in parallel relationship to each corresponding capacitor pair, said first rectifiers configured to conduct alternately with said second rectifiers;

b. inductor means having first and second ends and connected at said first end to the juncture of each said capacitor pair;

c. a transformer having first and second windings, said first winding having first and second ends and connected at said first end thereof to the juncture of one said first and second rectifier pair, and at said second end thereof to said second end of said inductor means;

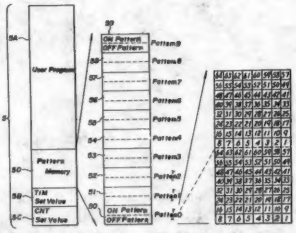
d. said first winding having a plurality of taps intermediate said first and second ends thereof, each of said taps connected to the juncture of one of the remainder of said rectifier pairs; and

e. said second winding having means for connection to a load.

4,608,628
PROGRAMMABLE CONTROLLER

Yashitane Saito, Kameoka; Tetsuo Doi, Kyoto, and Kiyoto Hirase, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 21, 1983, Ser. No. 506,376
Claims priority, application Japan, Jun. 21, 1982, 57-106531
Int. Cl.[4] G05B 19/02, 23/02
U.S. Cl. 364—141 2 Claims



1. A programmable controller, comprising:

means for cyclically executing a user program;

means for storing a plurality of status patterns, each of said status patterns having an assigned discrimination number and a plurality of binary digit positions corresponding to input and output data associated with execution of said user program, each of said digit positions being settable to an ON, OFF, EITHER ON or EITHER OFF state;

means for determining the acutal status of input and output data and for comparing whether the actual status of said input and output data bears a predetermined correspondence to one of said stored status patterns, said comparison being performed for every cycle of operation of said user program; and

means for displaying, when said predetermined correspondence exits, the discrimination number of a status pattern which bears said predetermined correspondence to said actual status of input and output data.

4,608,629

MULTIPROCESSOR MEMORY SYSTEM EMPLOYING DATA TRANSFER SYSTEM

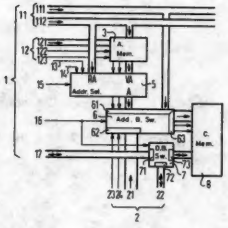
Klaus Nagel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 61,272, Jul. 27, 1979, abandoned. This application Jul. 13, 1984, Ser. No. 629,757

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842288

Int. Cl.[4] G06F 9/36

U.S. Cl. 364—200 6 Claims



1. A memory system employing an address bus carrying real address words (RAW), said address bus consisting of two subbuses, a first said sub-bus carrying a real memory part address (RPA) and a second said sub-base carrying a real local address (RLA); a memory having a plurality of memory parts of the same memory size, said memory parts being addressed by said real memory part addresses (RPA) and locations within each of such parts being addressed by said real local addresses (RLA); assembly means connected to said address bus for assembling addresses and connected to said memory for accessing said memory locations, said assembly means comprising an address selector and an address bus selection switch, an associative memory connected to said first said sub-bus and adapted to store a plurality of memory part addresses (PA), and to present said stored memory part addresses (PA) to an output of said associative memory; said address selector having a first input connected to said first sub-bus and a second input connected to the output of said associative memory, said address selector being adapted to supply either of said first and second inputs to its output, said address bus selector switch for selecting between addresses supplied from the address selector or from a processor bus and having a first input connected to the output of said address selector, and a second input connected to said second sub-bus, and an output connected to the address inputs of said memory; said address selector being connected to a control signal and responsive thereto for selecting either its said first or its second input for connection to said address bus switch; and said address selector being connected to said control signal and responsive thereto for supplying to said address bus switch either of its first and second inputs, whereby said memory is accessed either with said real address word (RAW) from said first and second sub-buses of said address bus or with an address word made up of the memory part addresses (PA) produced by said associative memory and said real local address (RLA) from said second sub-bus of said address bus.

4,608,630

METHOD AND APPARATUS FOR TRANSMITTING DATA WORDS ASYNCHRONOUSLY FROM ONE MICROPROCESSOR TO ANOTHER IN FORM OF TIMING INTERVALS

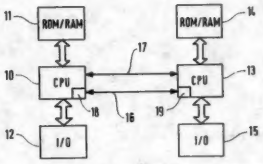
Bernd Schott, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 3, 1981, Ser. No. 298,943

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035804

Int. Cl.[4] H04J 3/02; H03K 5/26

U.S. Cl. 364—200 13 Claims



1. Apparatus for transmitting data from a first microprocessor system (10, 11, 12) to a second microprocessor system (13, 14, 15),

in which the data are in form of data units represented by numbers, comprising

means (18), in said first system (10, 11, 12) for receiving and converting a number representing a data unit to be transmitted to a corresponding gating time interval and generating a signal having a time duration, with respect to a predetermined time base, corresponding to said gating time interval, whereby said gating time interval, and hence said time duration, will be representative of the number to be transmitted;

means (16) for transmitting to said second microprocessor system said signal having said time duration and defining said gating time interval;

means (19) in said second microprocessor system (13, 14, 15) connected to receive said signal having said time duration, for determining said time interval, with respect to said time base, and for reconverting said signal back to the number constituting said data unit; and

a control line (17) interconnected between said first and second microprocessor system for signalling said data transmission.

4,608,631

MODULAR COMPUTER SYSTEM

Jack J. Stiffler, Concord; Richard A. Karp, Bedford; James M. Nolan, Jr.; Michael J. Budwey, both of Holliston, and David A. Wallace, Chelmsford, all of Mass., assignors to Sequoia Systems, Inc., Marlborough, Mass.

Continuation of Ser. No. 414,961, Sep. 3, 1982, Pat. No. 4,484,273. This application Nov. 19, 1984, Ser. No. 672,799

Int. Cl.[4] G06F 15/16

U.S. Cl. 364—200 24 Claims

1. A computer system comprising,

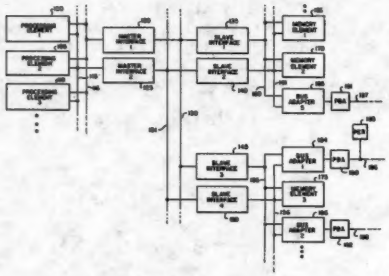
a plurality of processing elements for simultaneously performing data processing calculations for a plurality of data processing tasks, each of said processing elements performing data processing calculations for one data processing task independently from other data processing elements, said processing element generating request signals;

a common memory area having a plurality of storage locations, each of said plurality of storage locations being accessible by all of said processing elements;

a system bus for transferring signals between said processing elements and said memory area;

at least one processor bus connected to at least one of said plurality of processing elements; and

first arbitration means responsive to request signals generated from at least one of said processing elements for



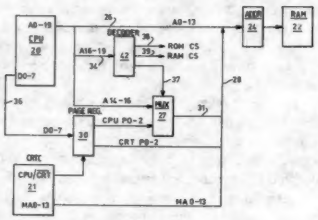
selectively transferring signals between said processor bus and said system bus.

4,608,632

MEMORY PAGING SYSTEM IN A MICROCOMPUTER

David A. Kummer, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1983, Ser. No. 522,892
Int. Cl.[4] G06Z *12/06*; G09G *1/14*
U.S. Cl. 364—200 **4 Claims**



1. A memory paging system in a microcomputer including a main random access memory (RAM), a central processor unit (CPU) having a data output and an address output, and a CRT controller (CRTC) for digital display control having an address output and a control output line carrying signals selectively defining CPU and CRTC address modes, said paging system providing fixed number groups of high order address bits to define fixed size pages within the RAM and including;

a page register system coupled to the data output of the CPU to receive therefrom and register a page bit data set comprising a CPU page address bit group and a CRTC page address bit group;

means coupling said control output line of the CRTC to a select input of the page register system to select and output the registered CPU page address bit group when said control output line carries a CPU mode signal and the registered CRTC page bit group when said output line carries a CRTC mode signal;

RAM address means coupled to the address output of the CPU, the address output of the CRTC and the output of the page register system for addressing said RAM with a combination of the CPU page address bit group from the page register system and lower order address bits from the address output of the CPU for CPU access to the RAM, and a combination of the CRTC page address bit group from the page register system and lower order address bits from the address output of the CRTC for CRTC access to the RAM, whereby both the CPU and the CRTC can access any page in the RAM in accordance with the values of the page address bit groups;

decoder means coupled to said CPU address output for decoding an address from the CPU in a first range of addresses outside addresses of locations in the RAM to generate a signal on a first output line; and

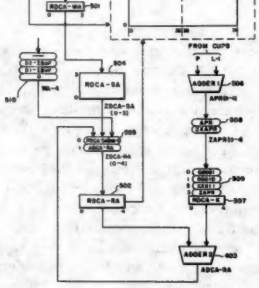
multiplexer means having a first input connected to receive said CPU page address bit group from the page register system, a second input connected to receive address bits, corresponding in order with said page address bits, from the CPU, a control input coupled to said first output line, and an output coupled to said RAM address means, said multiplexer means being switched by said signal on said first output line from a first condition in which it passes said CPU page address bit group to said RAM address means to a second condition in which it passes said address bits from the CPU to said RAM address means.

4,608,633

METHOD FOR DECREASING EXECUTION TIME OF NUMERIC INSTRUCTIONS

Donald C. Boothroyd, Phoenix; John E. Wilhite; Robert W. Norman, Jr., both of Glendale, and Howard J. Keller, Scottsdale, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Apr. 1, 1983, Ser. No. 481,202
Int. Cl.[4] G06F *9/34*
U.S. Cl. 364—200 **1 Claim**



1. A method of obtaining first and second operand data strings from a memory unit, wherein said first and second operand data strings are utilized in executing an instruction, and wherein said first and second operand data strings each includes at least one operand data word, each operand data word having a predefined format such that a predetermined group of bits of said operand data word defines a digit, said digit being a sign character or a numeric character, and wherein the first operand data word of each of said operand data strings contains a most significant digit, and the last operand data word of each of said operand data strings contains a least significant digit, said method comprising the steps of:

(a) loading said operand data words of said first and second operand data strings in a pre-established order in said memory unit; and

(b) fetching said operand data words, in sequential order from said memory unit, such that the operand data words of the first and second operand data strings having the most significant digit are fetched first, the remainder of said first operand data words are fetched next, and the remainder of the second operand data words are fetched in a reverse direction, such that the operand data word having the least significant digit is fetched first, thereby

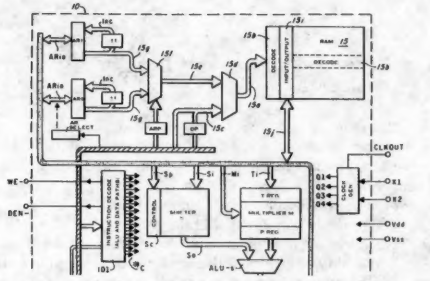
allowing a predetermined arithmetic operation designated by an arithmetic instruction to begin on the first and second operand data strings while the second operand data words are being fetched.

4,608,634

MICROCOMPUTER WITH OFFSET IN STORE-ACCUMULATOR OPERATIONS

Edward R. Caudel; Surendar S. Magar, and Wanda K. Gass, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,956
Int. Cl.[4] G06F *9/00, 13/00*
U.S. Cl. 364—200 **11 Claims**



1. A microcomputer device comprising:

an arithmetic/logic unit having first and second data inputs and data output;

a data memory having an address input and having data input/output means;

data bus means coupled to the first data input of the arithmetic/logic unit and coupled to the data input/output means of the data memory;

program memory means having an address input and having an instruction output, the program memory storing instruction words;

program address means connected to the address input of the program memory means;

control means for generating control signals in response to instruction words, the control signals defining operation of the arithmetic/logic unit and transfer to and from the data bus means;

program bus means coupled to receive instruction words from said instruction output for transfer to said control means, said program bus means coupled to said program address means;

shifter means coupling said data output of the arithmetic/logic unit to said data bus means and operative to shift the data a selected number of bits in transferring data from said data output to the data bus means, said shift being in response to said control signals generated from an instruction word via said control means; and

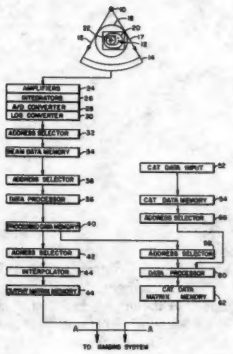
wherein the data output of the arithmetic/logic unit is coupled only to an accumulator and an output of accumulator is coupled to the data bus means via said shifter and to said second input of the arithmetic/logic unit directly without passing through the shifter.

4,608,635

METHOD AND APPARATUS FOR TOMOGRAPHIC DIAGNOSIS

Jewell L. Osterholm, Radnor, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 404,898, Aug. 3, 1982, Pat. No. 4,532,591. This application May 23, 1985, Ser. No. 737,239
The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—414 **8 Claims**



1. In a medical imaging apparatus comprising scanning means for scanning a portion of the central nervous system to produce signals corresponding to the tissue of various regions of the scanned system to be imaged, and imaging means coupled to the scanning means for generating an image representing the scanned tissue of various regions of the central nervous system, the improvement comprising:

memory means for storing and generating signals representing a predetermined electrophysiological condition of the central nervous system at various regions thereof including the spectrum of components in an electroencephalographic signal;

detector means for detecting signals representing the actual electrophysiological condition of the central nervous system at various regions thereof including means for spectrally analyzing the components of the detected electroencephalographic signal for the various regions;

comparison means coupled to said memory means and said director means for comparing the directed signals with the stored signals for said various regions of said central nervous system and for generating signals representing the deviation of the detected signals in one of the regions from said stored signals for said one of the regions; and

display means coupled to said comparison means and the imaging means for visually indicating said one of the regions representing said deviation on said image.

4,608,636

SLEW RATE FILTER FOR LOGGING CABLE SIGNAL PICK-OFF

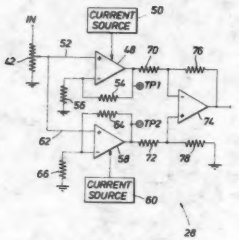
Richard A. Beals, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 23, 1984, Ser. No. 582,973
Int. Cl.[4] G06F *15/20*; G01V *1/00*
U.S. Cl. 364—422 **9 Claims**

1. In a well logging system including a fluid tight body member or sonde sized and adapted for passage in a well borehole and supported downhole on an armored well logging cable and said sonde a pulse source connected to a pulse transmitting conductor in said logging cable, a surface located data output system connected to said conductor and comprising:

(a) first and second amplifier means of similar construction, said first and second amplifier means both being operably connected to said transmitting conductor in said logging cable to receive a signal from the logging cable wherein electrical noise obscures the signal on the cable conductor;

(b) said first and second amplifier means being operable at adjustable slew rates under control of slew rate control currents provided to said first and second amplifier means,



and wherein first and second current sources are respectively connected to said first and second amplifier means to provide slew rate control currents thereto; and

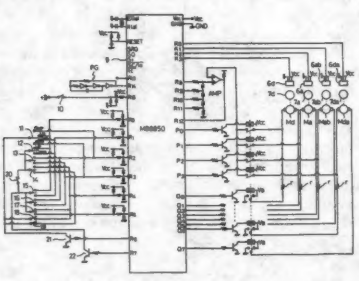
(c) summing means connected to the outputs of said first and second amplifier means, said summing means summing the output signals provided by said first and second amplifier means to form a differential signal therefrom, wherein said differential signal includes a signal of interest with reduced noise as a function of changes in the slew rate of said first and second amplifier means.

4,608,637

CONTROL DEVICE FOR DRIVING ROAD-VEHICLE ELECTRIC-POWERED EQUIPMENT

Teiji Okuyama, Toyota, and Hiroshi Noutomi, Yokohama, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Sep. 30, 1983, Ser. No. 537,619
Claims priority, application Japan, Sep. 30, 1982, 57-172964
Int. Cl.[4] G06F *15/20*; G06D *3/20*
U.S. Cl. 364—424 **8 Claims**



1. A control device for driving road-vehicle electric-powered equpment comprising:

a supporting means for supporting said equipment in a movable manner;

an electric-powered driving mechanism for driving said equipment;

an electric driver for actuating an electric motor in said electric-powered driving mechanism;

a switch means for instructing driving of said electric-powered driving mechanism; and

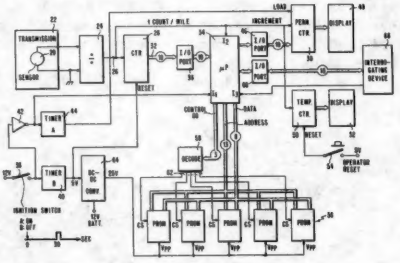
an electronic control device for reading a time-serial signal pattern generated in accordance with plural successive opening/closing operations of said switch means, and for actuating and controlling the electric motor in accordance with said opening/closing pattern.

4,608,638

APPARATUS FOR ACCUMULATING AND PERMANENTLY STORING STATISTICAL INFORMATION

Constantine Tsikos, Pennsauken, N.J., assignor to Siemens Corporate Research & Support Inc., Iselin, N.J.

Filed Oct. 21, 1983, Ser. No. 544,162
Int. Cl.[4] G06F *15/20, 13/00*
U.S. Cl. 364—424 **6 Claims**



1. Apparatus for monitoring usage to provide statistical data on historial usage of equipment being monitored said apparatus comprising:

(a) a non-volatile memory including:

(1) a plurality of electrical inputs;

(2) a plurality of bit storage locations organized into a plurality of groups with each location in a group associated with one type of event, all of the bits stored in said locations being originally set to the same, first logical state; and

(b) memory control means, responsive to electrical signals applied to said electrical inputs, for setting said bits in selected ones of said bit locations to their opposite, second logical state, said memory control means for changing the state of each bit only once so that the bits set to their second state are substantially permanently stored; said memory control means including logic means for defining the usage in terms of predetermined events wherein each predetermined event has attributes which categorize the type of usage to occur to the normal operation of the equipment being monitored, connected to said electrical inputs of said memory, and said logic means applying electrical signals to said electrical inputs in response to the occurrence of an event, said logic means including:

(1) first means for determining both the occurrence of an event and the type of such event;

(2) second means, responsive to said first means, for selecting a bit location associated with the type of event determined by said first means in which the stored bit is in said first state; and

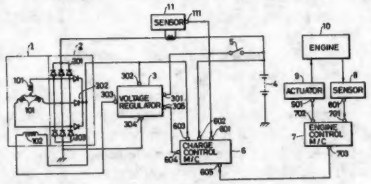
(3) third means, responsive to said second means and connected to said electrical inputs, for producing and applying to said electrical inputs electrical signals which set the bit at the selected bit location to its second state to indicate the occurrence of said predetermined event

whereby the apparatus provides current ongoing and permanent cumulative information about the frequency of occurrence of each predetermined event indicated by the number of bits which have been set to its second state in said selected bit location.

4,608,639
CHARGE CONTROL MICROCOMPUTER DEVICE FOR VEHICLE

Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1983, Ser. No. 495,542
Claims priority, application Japan, May 18, 1982, 57-85208
Int. Cl.[4] H02J *7/14;* G06F *15/56*
U.S. Cl. 364—424 **3 Claims**



1. A charge control microcomputer device for a vehicle, comprising:

an AC generator driven by an engine for generating an output current, said generator having armature coils and a field coil;

a battery charged by a rectified output of said generator and generating a terminal voltage;

a voltage regulator for controlling a current flowing in said field coil, to control an output voltage of said generator to a predetermined value;

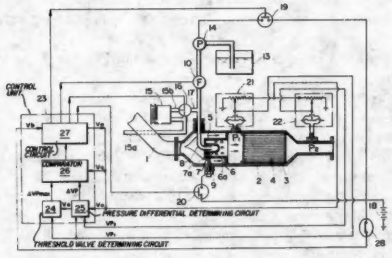
an engine controlling microcomputer for receiving engine parameter data from said engine, to control the operation of said engine;

a charge control microcomputer for processing input data including data on at least one engine parameter output from said engine controlling microcomputer, and charge system data including at least one of battery terminal voltage data, generator voltage data and generator output current data, to provide a reference voltage for said voltage regulator.

4,608,640
TRAP REGENERATIVE DEVICE CONTROL APPARATUS

Motohiro Shinzawa, Yokosuka, and Yoji Hasegawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jan. 9, 1984, Ser. No. 569,481
Claims priority, application Japan, Jan. 10, 1983, 58-1127; Jan. 14, 1983, 58-3524
Int. Cl.[4] F01N *3/28;* B01D *46/42*
U.S. Cl. 364—431.03 **28 Claims**



1. An apparatus for use in an internal combustion engine having an exhaust conduit for discharging exhaust particles together with exhaust gases to the atmosphere, and a trap located in said exhaust conduit for collecting exhaust particles, said apparatus comprising:

regenerative means operable to regenerate said trap;

sources for deriving signals indicative of a first condition representative of the presence (P1) on the inlet side of said trap and a second condition representative of the pressure (P2) on the outlet side of said trap; and

a control means responsive to the signals indicative of the first and second conditions for detecting a regeneration requirement to operate said regenerative means for a predetermined time period, said control means including:

means for calculating a pressure differential (ΔP) across said trap as a function of the values of the signals indicative of the first and second conditions;

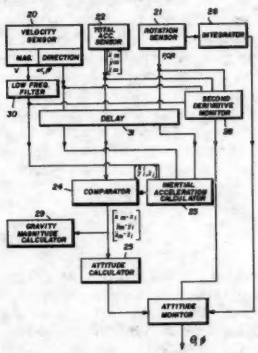
means for calculating a threshold value ($\Delta Pmax$) based upon the value of the signal indicative of the first condition; and

means for detecting a regeneration requirement when the calculated pressure differential (ΔP) reaches the calculate threshold value ($\Delta Pmax$).

4,608,641
NAVIGATIONAL AID

Reginald J. Snell, Warton, England, assignor to British Aerospace Public Limited Company, London, England

Filed Aug. 3, 1982, Ser. No. 404,901
Claims priority, application United Kingdom, Aug. 7, 1981, 8124243; Feb. 5, 1982, 8203334
Int. Cl.[4] G05D *1/10*
U.S. Cl. 364—434 **11 Claims**



2. A method of determining the attitude of a body operating in a gravitational field comprising:

measuring the total acceleration acting on the body in relation to a coordinate system fixed with respect to said body;

calculating the total inertial component of the total acceleration in relation to said coordinate system;

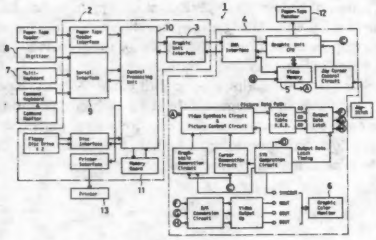
comparing said measured total acceleration with said total inertial component, thereby to generate data representative of the orientation of the gravitational component of acceleration in relation to said coordinate system; and

processing said data to determine the attitude of said body.

4,608,642
APPARATUS FOR RECORDING PATTERN INFORMATION AND PRODUCING A KNITTING CONTROL PROGRAM

Masahiro Shima, Wakayama, Japan, assignor to Shima Idea Center Co., Ltd., Wakayama, Japan

Filed Aug. 31, 1984, Ser. No. 646,296
Claims priority, application Japan, Sep. 27, 1983, 58-179729
Int. Cl.[4] G05B 19/00; D04B 7/24
U.S. Cl. 364—470 1 Claim



1. An apparatus for recording pattern information, comprising display means for pattern information which, when pattern information on a fabric to be knitted on a V-bed flat knitting machine, is entered thereinto in terms of units of pattern information one unit representing one or two stitches formed on one pair of opposed needles, front and back, in coded color or color code for each respective unit pattern information and according to a color code table, display

in coded colors on a graphic color monitor individual units of patterns information for each wale of stitches and individual units of pattern information for each course of stitches, with said information units for each wale arranged in dots on one of X and Y coordinates axes and said information units for each course arranged in dots on the other coordinate axis, each unit pattern information being represented by one dot, pattern information storage means for storing pattern information input into said display means, interpreter means for reading the pattern information stored in said storage means in the sequence of knitting and for translating the pattern information for each course of stitches into pattern data and control data for a required number of knitting courses and write means for writing said pattern data and control data for each knitting course onto a desired recording medium.

4,608,643
AUTOMATIC TOOL GRINDING MACHINE WITH COMPUTERIZED CONTROL

Charles T. Breitenstein, Elk Grove Village, and Allen R. Holecek, Rockton, both of Ill., assignors to Spiral Step Tool Company, Elk Grove Village, Ill.

Filed Aug. 18, 1983, Ser. No. 524,443
Int. Cl.[4] G06F 15/46; B24B 19/08
U.S. Cl. 364—474 4 Claims

1. An automatic tool grinding machine, comprising

holding means for holding a generally cylindrical tool to be ground,

first and second drive means for translating said holding means along rectangularly related x and y axes defining an x-y plane,

said holding means including means for holding the generally cylindrical tool along a tool axis which is parallel with said x-y plane,

third drive means connected to said holding means for producing rotation of the tool about the tool axis,

a first grinding unit comprising a first grinding motor and grinding wheel,

said first and second drive means being operative to feed the tool relative to said grinding wheel,

fourth drive means for translating said grinding motor and wheel along a fixed z axis substantially perpendicular to said x-y plane for feeding said wheel into the tool,

fifth drive means for swinging said grinding motor and wheel about the z axis to a desired angle relative to the tool,

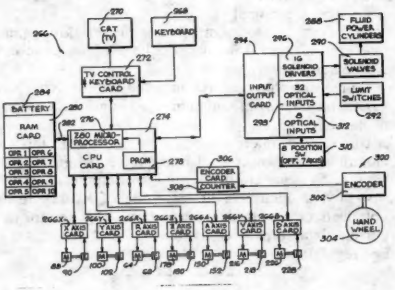
at least a second grinding unit including a second grinding motor and wheel,

sixth drive means for feeding said second grinding motor and wheel along a fixed v axis substantially perpendicular to said x-y plane,

the v axis being substantially parallel with the z axis but substantially spaced apart therefrom,

each of said drive means comprising a servomotor and an encoder for precisely positioning said drive means and for indicating the position of said drive means,

swivel means for swiveling said holding means about a swivel axis substantially perpendicular to said x-y plane between a first position with the tool axis substantially



parallel with the x axis and a second position with the tool axis substantially parallel with the y axis for presenting the tool to said first and second grinding wheels in the respective first and second positions,

a keyboard including keys for entering dimensional values and parameters for said various drive means,

a memory for storing said dimensional values and parameters,

a TV tube for displaying said dimensional values and parameters,

means for bringing up a series of questionnaire pages on the TV tube calling for all of the dimensional values and parameters needed to program the machine,

means for producing a cursor on the TV tube to indicate the question which is presently being considered,

whereby the operator responds to each question and enters the dimensional values and parameters called for which are then stored in the memory and displayed on the TV tube opposite the respective questions,

and control means for putting said drive means through a cycle of operations using the dimensional values and parameters stored in the memory.

4,608,644

TOOL LIFE, OFFSET, AND SELECTION SUPERVISION METHOD

Nobuyuki Kiya, Tokyo, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

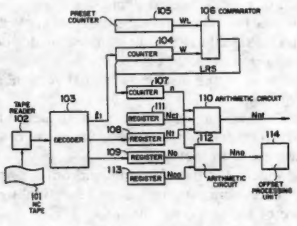
PCT No. PCT/JP83/00330, § 371 Date May 17, 1984, § 102(e) Date May 17, 1984, PCT Pub. No. WO84/01534, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 6, 1983, Ser. No. 616,827

Claims priority, application Japan, Oct. 7, 1982, 57-176692

Int. Cl.[4] G05B *19/403;* B23Q *15/16*

U.S. Cl. 364—474 **10 Claims**



1. A tool life supervision method in which the life of a tool is monitored and machining is performed by automatically using another tool when a former tool has reached the end of its life, the method comprising the steps of:

(a) setting in memory means a number W_L of parts to be machined, which number conforms to tool life, and setting in the memory means a tool selection number correction value Nct;

(b) inserting at an end of an NC machining program at least an instruction or symbol which indicates the end of the program;

(c) detecting and counting the number of times W the instruction or symbol indicating the end of a program is detected;

(d) monitoring whether the counted value W coincides with a preset number W_L of parts to be machined and;

(e) counting the number of times n coincidence is achieved and performing the following operation to determine a tool selection number:

$$Nt+Nct\cdot n$$

wherein NT represents a tool selection number indicated by a tool selection instruction in the NC machining program; and

(f) selecting a tool by employing the result of the aforesaid operation as an actual tool selection number.

4,608,645

NUMERICAL CONTROL SYSTEM FOR A MACHINE TOOL WITH A TOOL DIMENSION COMPENSATION FUNCTION

Kuniyuki Niwa, and Yoshiyuki Fujimura, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed May 11, 1984, Ser. No. 609,218

Claims priority, application Japan, May 17, 1983, 58-87162

Int. Cl.[4] G06F *15/46;* G05B *23/02*

U.S. Cl. 364—474 **9 Claims**

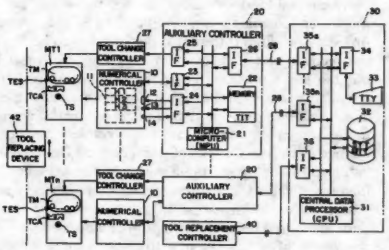
7. A numerical control system for a machine tool with a tool magazine for removably storing a plurality of primary tools which are to be selectively attached to a tool spindle, said system comprising:

a numerical controller coupled to said machine tool for controlling said machine tool in accordance with a numerical control program, said numerical controller including first memory means for storing at least one tool dimension data, said numerical controller being capable of modifying, based upon said at least one tool dimension data, a feed movement of said machine tool which is performed in accordance with a program block of said numerical control program; and

system control means coupled to said numerical controller and including:

(a) second memory means for storing first and second tool dimension data being respectively associated with first and second spare tools, said first spare tool being scheduled to be used in place of one of said primary tools being stored in said tool magazine, said second spare tool being scheduled to be used in place of said first spare tool;

(b) data read-out means for reading out a corresponding one of said first and second tool dimension data from



said second memory means so as to enable said corresponding one of said first and second tool dimension data to be supplied to said numerical controller when any of said first and second spare tools is used on said tool spindle; and

(c) data transfer means for transferring said first tool dimension data read out from said data readout means to said numerical controller when said first spare tool is used on said tool spindle in place of said one of said primary tools and for transferring said second tool dimension data read-out from said data read-out means to said numerical controller when said second spare tool is used on said tool spindle in place of said first spare tool.

4,608,646

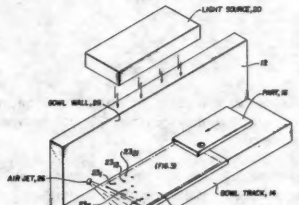
PROGRAMMABLE PARTS FEEDER

Jerry L. Goodrich, State College, Pa., and William L. Devlin, Evans, Colo., assignors to Programmable Orienting Systems, Inc., Port Mathilda, Pa.

Filed Oct. 25, 1984, Ser. No. 664,852

Int. Cl.[4] B65G *43/08, 47/24;* G05B *19/00*

U.S. Cl. 364—478 **24 Claims**



1. A programmable parts feeding system for feeding parts from a mixed batch in a programmed sequence comprising:

means for moving parts along a predetermined travel path;

means for rejecting a wrong or improperly oriented part from said travel path;

part silhouette recognizer means in said travel path and including a source of radiation, an apertured grid having a hole pattern which is operable to determine both part orientation and identification of a mixed batch of parts traveling along said travel path, and radiation sensing means coupled to said hole pattern for sensing the shadow image information of a part located on or traversing said grid;

controller means operable in accordance with a stored program and having memory means for storing part information therein, said controller means being coupled to said radiation sensing means and said rejecting means, and further including means for implementing a plurality of user selectable operational modes including an image mode for sensing the respective images of a plurality of properly oriented different types of parts to be fed out of the feeding system as well as assigning each part type a number and a portion of said memory means and thereafter storing sensed part image information of each part type at a respective portion of said memory means, a sequence mode for programming a predetermined positional sequence of different types of parts desired from said mixed batch followed by storing a part number sequence in said memory means, and a run mode to thereafter compare the sensed image information of parts traversing said grid with the stored image information of a desired part type in the order of said sequence to deactivate said rejecting means when a predetermined image match occurs during part feeding to permit a predetermined sequence of parts to be fed out of the parts feeding system in a programmed order and

means for reactivating said rejecting means after the passage of the required properly oriented part past said rejecting means.

4,608,647

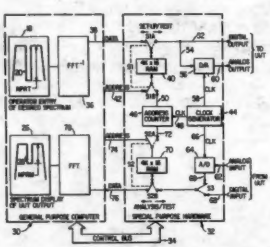
METHOD AND APPARATUS FOR DETERMINING THE NOISE POWER RATIO (NPR) OF A UNIT UNDER TEST

Thomas E. White, Richardson, and Brooks C. Fowler, Dallas, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Oct. 24, 1983, Ser. No. 544,494

Int. Cl.[4] G01R *29/26*; G06F *15/332*

U.S. Cl. 364—481 **18 Claims**



1. A method for determining the noise power ratio of a unit under test utilizing a general purpose digital computer, comprising the steps of:

prompting an operator to input to the computer various parameters which define a desired test spectrum;

generating a frequency domain representation signal of said desired test spectrum, said spectrum having a notch of predetermined depth;

transforming said frequency domain representation signal into an input signal sequence defining a time domain representation thereof;

applying said input signal sequence to said unit under test;

receiving an output signal sequence from said unit under test defining a time domain representation of a measured test spectrum;

transforming said output signal sequence into a frequency domain representation signal having a notch of measured depth; and

calculating said noise power ratio in dB of said unit under test by taking the ratio of the notch depths of frequency domain representation signals for said desired and measured test spectrums.

10. A test apparatus for use in determining the noise power ratio of a unit under test, comprising:

means for producing a frequency domain representation signal of a desired test spectrum, said spectrum having a notch of predetermined depth;

first means for transforming said frequency domain representation signal to an input signal sequence defining a time domain representation thereof;

means for applying said input signal sequence to said unit under test;

means for receiving an output signal sequence from said unit under test defining a time domain representation of a measured test spectrum;

second means for transforming said output signal sequence into a frequency domain representation signal having a notch of measured depth; and

means for calculating the noise power ratio of said unit under test by taking the ratio of the notch depths of the frequency domain representation signal for said desired and measured test spectrums.

4,608,648

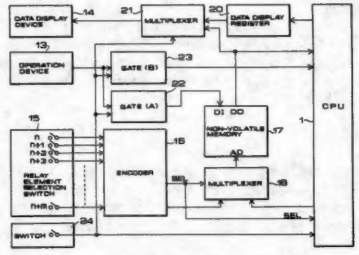
DATA DISPLAY SYSTEM

Kenji Oogaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 598,062

Int. Cl.[4] G01R *31/08*

U.S. Cl. 364—483 **2 Claims**



1. A data display system for power line systems having a digital data display device for displaying selectively computational data used in a computational process carried out by a central processing unit in a digital protective relay and setting values stored in a memory for use as reference criteria in the computational process by said central processing unit, said system comprising:

an operation device for specifying numeric codes in correspondence to said computational data and addresses of said memory storing said setting values;

selection switch means for specifying one of said setting values stored in said memory;

gate circuit means adapted to pass the output of said operation device selectively to said central processing unit or said memory;

a display selection switch for controlling operation of said gate circuit means;

a multiplexer adapted to pass selectively one of computational data from said central processing unit or a setting

value from said memory under control of said display selection switch;

said selection switch means comprising switches equal in number to the number of said setting values;

an encoder circuit which receives the outputs of said switches;

a second multiplexer which receives a selection signal produced by said encoder circuit in response to an ON-state of any one of said switches and, during a period of receiving the selection signal, passes only the output of said encoder circuit to said memory;

said gate circuit means comprising a first gate circuit which passes the output of said operation device to said memory when said display selection switch is set in a first state and blocks the output when said display selection switch is set in a second state, and a second gate circuit which passes the output of said operation device to said central processing unit when said display selection switch is set in the second state and blocks the output when said display selection switch is set in the first state; and

a data display register connected between said central processing unit and said multiplexer;

whereby computational data specfied by the setting on the operation device is displayed on said display device to allow display of computational data without the need for a special maintenance operation to monitor the process of said central processing unit.

4,608,649

DIFFERENTIAL CASCODE VOLTAGE SWITCH (DCVS) MASTER SLICE FOR HIGH EFFICIENCY/CUSTOM DENSITY PHYSICAL DESIGN

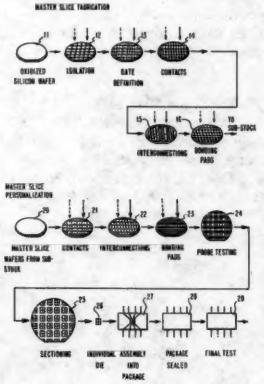
James W. Davis, Boca Raton; Victor S. Moore, Gainesville, and Nandor G. Thoma, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,451

The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.

Int. Cl.[4] H03K *19/094, 19/173*

U.S. Cl. 364—491 **2 Claims**



1. A method of fabricating a master slice wafer for stockpiling in a substock awaiting further steps in defining a completed functional product incorporating Differential Cascode Voltage Switch (DCVS) circuits, comprising:

(1) locating a silicon wafer; and

(2) processing said wafer to establish an isolation region, a source/drain diffusion region, and a polysilicon gate region thereon, whereby the vertical structures of all the active components on the wafer is complete, the processing steps being controlled to produce a completed master-slice comprised of two general areas of microblocks including an input/output cell perimeter and a DCVS logic array of MOS transistors arranged into device rails including associated power rails, the microblocks including said MOS transistors being cascoded into binary decision trees for developing logic signals and setting current levels.

4,608,650

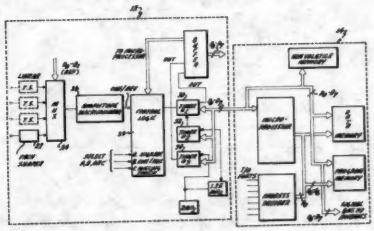
IMBALANCE MEASURING SYSTEM AND METHOD

Nikul S. Kapadia, El Toro, Calif., assignor to Becton Dickinson and Company, San Juan Capistrano, Calif.

Filed Aug. 9, 1983, Ser. No. 521,725

Int. Cl.[4] G01N *29/04*

U.S. Cl. 364—508 **10 Claims**



1. Apparatus to enable the balancing of the rotating component of complex machinery comprising:

(a) transducer means for detecting and singalling an imbalance condition in the rotating component;

(b) signalling means coupled to the rotating component for signalling frequency of rotation;

(c) sampling means coupled to said signlling means for generating a predetermined number of sampling pulses during each revolution of the rotating machinery;

(d) data acquisition means, coupled to said transducer means and said sampling means, operative in response to said sampling pulses for providing said predetermined number of data samples each revolution;

(e) analog to digital converting means for providing transducer signals in digital form;

(f) digital filtering means responsive to applied digitized data samples for creating signals representative of the magnitude of a parameter of imbalance of the rotating component; and

(g) storage and comparison means for recording the signals dreated in said digital filtering means for determining the signal of greatest magnitude and its time of occurrence;

wherein an imbalanced rotating component can be monitored during operation to determine the magnitude of the imbalance.

4,608,651

CONTROL SYSTEM FOR DIRECT TEACHING/PLAYBACK TYPE ROBOTS

Tsudoi Murakami; Shoji Nasu; Yasuhide Nagahama, all of Kobe; Hironosuke Kada, Kanagawa; Teruyoshi Sekino, Kanagawa; Hirokazu Murayama, Kanagawa; Yoshiaki Munezane, Kanagawa; Goro Tuda, Kobe, and Osamu Mizuguchi, Higashimachi, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 1, 1983, Ser. No. 499,880

Claims priority, application Japan, Oct. 28, 1982, 57-190092; Oct. 28, 1982, 57-164528[U]; Oct. 28, 1982, 57-190093; Nov. 9, 1982, 57-170694[U]; Nov. 26, 1982, 57-208092

Int. Cl.[4] G09C *00/00;* **G05B** *19/18;* **B25J** *11/00;* **F16D** *21/04*

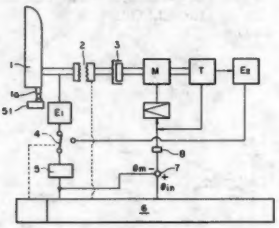
U.S. Cl. 364—513 **17 Claims**

1. A control system for a direct teaching/playback robot, including a transmission having a low spring constant member

connected to a drive source for driving a robot element through a frictional coupling means, and a drive source control means for controlling said drive source, said control system comprising:

first position detecting means provided between said robot element and said frictional coupling means for detecting a rotational position of said robot element and for producing output data indicative of said rotational position of said robot element at an output terminal;

second position detecting means connected to said drive



source for detecting the rotational position of said drive source and for producing output data indicative of the rotational position of said drive source at an output terminal; and

switch means for selectively connecting the output terminals of said first and second position detecting means to said drive source control means in teaching and playback modes of operation, respectively, such that delays or error caused by torsional deformation of the transmission are eliminated upon switching between said teaching and playback modes of operation.

4,608,652

METHOD OF DISPLAYING A LOGIC SIGNAL

Hidemi Yokokawa, Tokyo, and Miyuki Fukuzawa, Kanagawa, both of Japan, assignors to Sony/Tektronix Corporation, Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,544

Claims priority, application Japan, Feb. 16, 1982, 57-23065

Int. Cl.[4] G06F *15/626, 5/00*

U.S. Cl. 364—521 **5 Claims**

1. A method of compressing a first binary bit sequence, the method comprising the steps of:

comparing a first and a second bit of said first sequence;

generating an output bit of a state matching said first bit if said first and second bits are of a similar state and generating an output bit of a first state if said first and said second bits are of differing states;

comparing each successive bit of said first sequence, except said first and second bits thereof, to its preceding bit; and

generating an output bit of a state matching said preceding bit whenever any said successive bit and its preceding bit are of a similar state, and generating an output bit differing in state from a last generated output bit whenever any said successive bit and its preceding bit are of differing states, said output bits comprising a second binary bit sequence having one less bit than said first sequence.

4,608,653

FORM CREATING SYSTEM

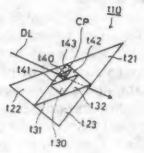
Ryozo Setoguchi, 50, Minamisomeshimachi, Sendai, Miyagi, Japan

Filed Oct. 10, 1984, Ser. No. 659,406

Claims priority, application Japan, Mar. 30, 1984, 59-63006; Apr. 18, 1984, 59-78123

Int. Cl.[4] G06F *15/626*

U.S. Cl. 364—522 **17 Claims**



1. A form creating system comprising:

straight line setting means for setting up a straight line passing through a desired point and having a desired direction;

surface-to-be-detected setting means for setting up a surface to be detected which has a desired shape and from which an intersection point position is to be detected;

surface division means for dividing a predetermined surface into a predetermined number of surfaces; and,

intersection-point-containing-surface detection means for detecting an intersection point containing surface that contains an intersection point of said straight line and said surface to be detected, out of said predetermined number of surfaces divided by said surface division means,

characterized in that said surface to be detected is divided into a predetermined number of surfaces by said surface division means, said intersection point containing surface is detected from these divided surfaces, and said intersection point containing surface is again divided into a predetermined number of surfaces, said intersection point containing surface is detected from these divided surfaces, and these division/detection operations are repeated to detect said intersection point of said straight line and said surface to be detected.

4,608,654

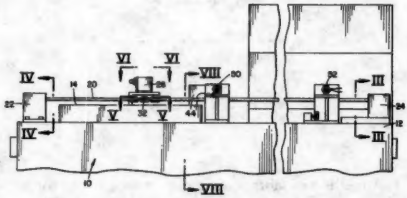
LINEAR POSITION INDICATOR

Helmut Schafsteller, Ambler, Pa., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Dec. 13, 1983, Ser. No. 561,014

Int. Cl.[4] G06F *15/46;* G05B *11/18*

U.S. Cl. 364—559 **14 Claims**



1. A position indicator for indicating the relative position of two members relatively movable for a predetermined distance in a predetermined direction comprising:

a length of chain secured at both ends to one of said member to be extended to lie along said predetermined direction for said predetermined distance;

an encoder secured for movement with the other of said members, said encoder having a rotatable input shaft and

including means providing output position information signals in response to rotation of the input shaft;

a sprocket, connected to said rotatable input shaft, and having peripheral teeth positioned to engage each portion of said length of chain successively to rotate said input shaft during relative movement of the two movable members in said predetermined direction.

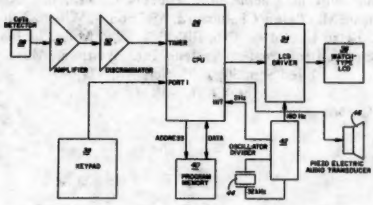
4,608,655
WRISTWATCH DOSIMETER

Michael A. Wolf; David A. Waechter, and C. John Umbarger, all of Los Alamos, N. Mex., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 369,305, Apr. 16, 1982, abandoned. This application Feb. 22, 1985, Ser. No. 704,900

Int. Cl.[4] G01T *1/16*

U.S. Cl. 364—569 **11 Claims**



1. A wristwatch dosimeter comprising:

a digital wristwatch housing having a window for a numerical display and detector aperture means;

a watch-type LCD or LED display disposed at said housing window;

means within said housing for performing watch functions communicating with said display;

CdTe detector means disposed in said housing behind said detector aperture means;

means for storing predetermined safety limits of radiation field and exposure;

microprocessor means connected to said detector means for accumulating and storing radiation field and exposure parameters;

microprocessor means for comparing said parameters with said stored predetermined safety limits; and

means for alerting a user of an unsafe condition by alarm when said parameters exceed said safety limits.

4,608,656
ROAD MAP DISPLAY SYSTEM WITH INDICATION OF A VEHICLE POSITION

Haruto Tanaka; Kiyoshi Yamaki, and Hidetaka Suzuki, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 2, 1982, Ser. No. 365,105

Claims priority, application Japan, Apr. 13, 1981, 56-54363

Int. Cl.[4] G01C *21/00;* **G06F** *15/50*

U.S. Cl. 364—449 **13 Claims**

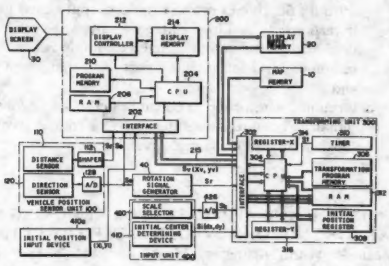
1. A road map display system for an automotive vehicle comprising:

a first memory storing road map data, said road map data defined on a first coordinate system;

a sensor detecting displacement of the vehicle from a starting point and producing a first signal representative of vehicle orientation and position with respect to said first coordinate system;

a scale selector responsive to said first signal for monitoring vehicle position and adjusting the scale of the map when the vehicle is within a predetermined distance of a preselected point on the map, said selector producing a second signal representative of the selected scale;

means for transforming said map data in said first memory in response to said first and second signals for producing map data defined on a second coordinate system and for



centering said transformed map data about said vehicle position;

a second memory for storing said transformed map data; and

a display unit for displaying at least part of the contents of said second memory and having on said second coordinate system a mark representing the position of the vehicle.

4,608,657
METHOD AND APPARATUS FOR TESTING PROBE CALIBRATION

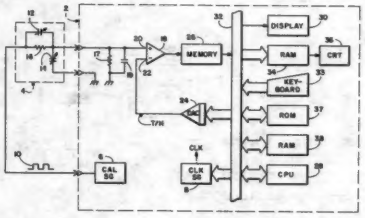
Teruo Manome, Kanagawa; Yasuhiko Miki, Tokyo; Kentaro Takita, Tokyo, and Minoru Fukuta, Tokyo, all of Japan, assignors to Sony/Tektronix Corporation, Tokyo, Japan

Filed Nov. 1, 1982, Ser. No. 438,101

Claims priority, application Japan, Nov. 17, 1981, 56-184095

Int. Cl.[4] G06F *15/20;* **G01R** *35/00*

U.S. Cl. 364—571 **22 Claims**



7. A probe calibration testing apparatus, comprising:

means for generating a square-wave signal to be applied to a probe;

means for generating a variable reference level;

means for comparing an output signal from said probe with the reference level and for producing an output signal indicating whether or not the probe output signal exceeds the reference level; and

control means for controlling said reference level to a level within a selected range of a peak level of the probe output signal, and for determining whether said probe is calibrated by repeatedly sampling the output signal from said comparison means.

22. A method of testing calibration of a probe comprising the steps of:

applying a square-wave signal to the probe to generate a probe output signal, each cycle of said square-wave signal having a high voltage portion and a low voltage portion;

generating a reference voltage level lower than the lowest magnitude of said probe output signal during a given

portion of each cycle thereof generated in response to the low voltage portion of each corresponding cycle of said square-wave signal;

successively increasing said reference level by a selected amount and comparing said probe output signal magnitude with each successively increased reference level during said given portion of said output signal generated in response to said low voltage sqaure-wave cycle portion until said probe output signal magnitude is less than said reference level for at least a part of its said given portion; and

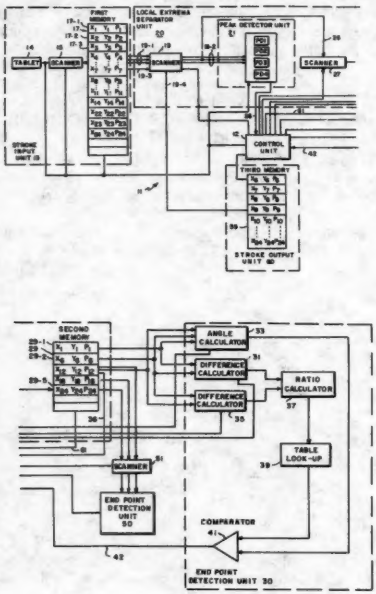
determining said probe to be calibrated if said probe output signal magnitude is less than said reference level during substantially all of its said given portion.

4,608,658

METHOD AND APPARATUS FOR REMOVING NOISE AT THE ENDS OF A STROKE CAUSED BY RETRACING

Jean R. Ward, Arlington, Mass., assignor to Pencept, Inc., Waltham, Mass.

Filed Apr. 13, 1984, Ser. No. 599,989
Int. Cl.[4] G08C *25/00*
U.S. Cl. 364—574 **8 Claims**



1. A method of processing a first series of signals representing a stroke of a writing instrument on a writing surface to remove signals at the start of the stroke caused by retracing, said first series of signals corresponding to the X and Y coordinates of a series of points along the length of travel of the stroke, the method comprising:

a. comparing said signals in said first series relative to each other to form a second series of signals, said second series of signals comprising only signals corresponding to local extrema points of said stroke,

b. measuring the size of the angle defined by the first three local extrema points in said second series

c. determining a reference angle which is related to the distances from the first local extrema point to the second local extrema point and from the second local extrema point to the third local extrema point,

d. comparing the measured angle with the reference angle, and

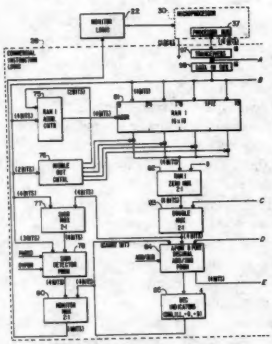
e. removing all signals in said first series corresponding to points before and second local extrema point if the measured angle is less than the reference angle.

4,608,659

ARITHMETIC LOGIC UNIT WITH OUTPUTS INDICATING INVALID COMPUTATION RESULTS CAUSED BY INVALID OPERANDS

John J. Bradley, Framingham; Theodore R. Staplin, Jr.; Ming T. Miu, both of Chelmsford; Thomas C. O'Brien, Ashland; George M. O'Har, Chelmsford; Melinda A. Widen, Arlington, and Brian L. Stoffers, No. Billerica, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1983, Ser. No. 537,991
Int. Cl.[4] G06F *11/10*
U.S. Cl. 364—737 **6 Claims**



1. An arithmetic logic unit for use in a processor comprising,

a memory having an address input accepting information bits which include two groups of bits each representing an operand and a bitindicating a mathematical function to be performed using the two operands, said memory having an output from which are read computation result bits from said memory indicating the result of the indicated mathematical operation involving the two operands, and including a first invalid computation result bit indicating if the result of the indicated mathematical operation read from said memory is invalid because the input information bits representing one or both of the operands do not represent a valid numerical digit,

first means for selecting the ones of the information bits representing a first operand to be applied to the address input of said memory,

second means for selecting the ones of the information bits representing a second operand to be applied to the address input of said memory, and

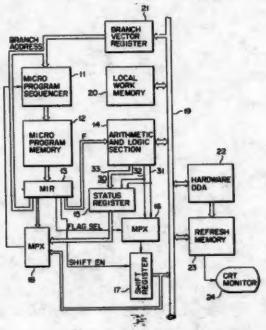
storage means for storing the first invalid computation result bit read out onto the output of said memory, said first invalid computation result bit indicating to said processor that the result of the mathematical operation output from said memory is invalid because the information bits on the address input of said memory and indicating one or both of said operands do not represent a valid numerical digit.

4,608,660

DATA PROCESSING SYSTEM WITH CONDITION DATA SETTING FUNCTION

Kouki Hasebe, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 25, 1984, Ser. No. 573,715
Claims priority, application Japan, Jan. 28, 1983, 58-12528
Int. Cl.[4] G05F *7/50*
U.S. Cl. 364—768 8 Claims



1. A data processing system with a condition data setting function, comprising:

a microprogram memory for storing microprograms consisting of micro-instructions including a plurality of specific subtraction micro-instructions for obtaining condition data consisting of a combination of bits respectively representing the sign of the results of each of a plurality of subtraction operations;

a micro-instruction register into which a micro-instruction read out from said microprogram memory is loaded;

an arithmetic and logic section which performs an arithmetic operation, in accordance with the specific subraction micro-instruction loaded in said micro-instruction register, and which outputs status data including a carry flag and a sign flag; and

a multiplexer for selecting one of said carry flag and sign flag, in response to a specific bit of the specific subtraction micro-instruction received from said micro-instruction register; and

serial-to-parallel converting means for receiving the output from said multiplexer, as one of the bits of said condition data, and shifting the data already stored, thereby holding the condition data which has been obtained from the specific subtraction micro-instructions.

4,608,661

PROGRAMMABLE SEQUENCE CONTROLLER

Junichi Sasaki, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 440,313, Nov. 9, 1982, abandoned. This application Nov. 15, 1985, Ser. No. 798,156
Claims priority, application Japan, Nov. 16, 1981, 56-182188
Int. Cl.[4] G06F *9/00, 11/00;* G05B *15/08*
U.S. Cl. 364—900 5 Claims

1. A sequence controller including means for connection to at least one other sequence controller comprising:

a central processing unit for generating an inner definition signal related to a status of said sequence controller;

first memory means for storing a system program for said sequence controller;

second memory means for storing a sequence program;

third memory means for storing data required for performing said sequence program;

first control means for receiving an input signal from an input element;

second control means for transmitting an output signal to an output element;

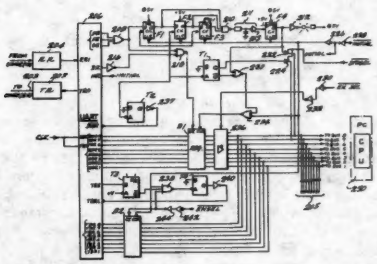
bus means for interconnecting said central processing unit, said first memory means, said second memory means, said third memory means and said first and second control means;

transmitting means for transmitting said inner definition signal related to a status of said sequence controller to said at least one other sequence controller; and

receiving means for receiving an outer definition signal related to a status of said at least one other sequence controller from said at least one other sequence controller;

said inner and outer definition signals being stored at predetermined addresses in said third memory means;

universal asynchronous receiver transmitter (UART) connected to both of said receiving and transmitting means for converting said outer definition signal to parallel mode data and for converting said inner definition signal supplied from said central processing unit to serial mode data, said UART executing a parity check, format check and overrun check concerning said outer definition signal arrived at said UART, and generating an error detection signal representing a detection of at least one of a parity check error (PE), a format error (PE) and a overrun error (OE), and generating a data ready signal (DR);



a first buffer register for receiving said parallel mode data of said outer definition signal from said UART;

a second buffer register for receiving parallel mode data of said inner definition signal through said bus means from said central processing unit, said first and second buffer registers being connected to said UART;

gate means for allowing said outer definition signal in said first buffer register to transmit to said third memory means through said bus means; and

data clear means for clearing a content of the first buffer register in response to said error detection signal being consecutively generated for a predetermined number of times.

4,608,662

METHOD FOR EDITING DOCUMENT

Shigeru Watanabe, Yokohama; Hiroshi Kinukawa, Sagamihara; Kenjiro Mori, Yokohama; Kenji Koichi; Shinji Kimura, both of Kawasaki; Makoto Yamanouchi, Owariasahi, and Yasuo Yajima, Kawasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

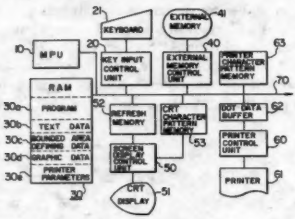
Continuation of Ser. No. 317,841, Nov. 3, 1981. This application Mar. 6, 1984, Ser. No. 586,826
Claims priority, application Japan, Nov. 7, 1980, 55-155860
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 9 Claims

1. A method for editing a page of a document containing a synthesis of a multi-line text sentence having a predetermined line pitch and character pitch and a desired graphic figure by

using a document editing apparatus including an output unit and a display unit having a display screen, in which the line pitch and the character pitch of the text sentence displayed on each line of said display unit are different from the character line pitch and the character pitch of the text sentence produced on each line by said output unit, said method comprising:

a first step of designating a first area on said display unit for accommodating a desired graphic figure within the same page;

a second step of determining coordinates of the designated first area and providing a layout of the text sentence so that the text sentence will appear in an area of the display screen of said display unit outside said first area;



a third step of displaying on the display screen of said display unit the text sentence whose layout is provided in said second step;

a fourth step of converting said first area into a second area having a size which is defined on the basis of the relationship between the line pitch and the character pitch in said display unit and the line pitch and the character pitch in said output unit, respectively;

a fifth step of forming in the second area a desired graphic figure having longitudinal and lateral dimensions such that the entire figure can be included within the second area; and

a sixth step of outputting from said output unit the graphic figure formed in said fifth step together with the text sentence whose layout is provided in said second step.

4,608,663

COMPUTER NETWORK FOR USING A COMMON PERIPHERAL DEVICE

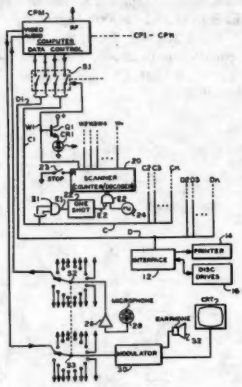
William E. Gordon, Short Hills, N.J., assignor to Wolsten's Computer Devices, Inc., East Orange, N.J.

Filed Aug. 31, 1983, Ser. No. 528,253
Int. Cl.[4] G06F *13/22*
U.S. Cl. 364—900 **10 Claims**

1. A non-random network for connecting a common peripheral device to one of a plurlity of computers, each having a request line for providing a request signal, comprising:

a plurality of switching means each coupled to said common peripheral device and to a corresponding one of said computers, each of said switching means being operable in response to a select signal being applied thereto to transfer data between its corresponding one of said computers and said common peripheral device; and

scanning means coupled to said plurality of switching means for enabling them in a predetermined order to transfer said data by sequentially applying to them said select signal, said scanning means being coupled to said request line of each of said computers and being responsive to the presence thereupon of said request signal, said scanning means being operable to cease sequencing and to continue applying said select signal to a chosen one of said plurality of switching means that is coupled to a selected one of said computers in response to the request signal from said selected one of said computers, the select signal applied to the chosen one of said plurality of switching means being terminated in response to termination of the request signal from the selected one of said computers, after terminating the select signal said scanning means being operable to restore the select signal to the same one of said switching



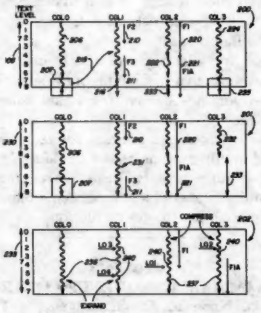
means only after each of the other ones of said switching means has had temporarily applied to it by said scanning means said select signal.

4,608,664

AUTOMATICALLY BALANCING AND VERTICALLY JUSTIFYING A PLURALITY OF TEXT/GRAPHICS-COLUMNS

Geoffrey M. Bartlett, Ridgefield, Conn.; James P. Hofmeister, Tucson, Ariz.; Derald D. Nye, Tucson, Ariz., and Edward J. Pring, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1983, Ser. No. 469,180
Int. Cl.[4] G06F *3/12, 15/626*
U.S. Cl. 364—900 **12 Claims**



11. In a document preparation system having means for receiving unformatted text data, a programmed processor coupled to said receiving means for formatting said received unformatted text data and output means coupled to said programmed processor for receiving formatted text data for visually presenting said document, said programmed processor having a control memory storing program indicia for enabling the programmed processor to automatically format said unformatted text data without interactive terminal input from an operator;

the improvement including, in combination:

first program indicia in said control memory for enabling said programmed processor to electrically indicate a num-

ber of columns to present text data on a given logical page and the depths of said columns, and indicating a shortest and longest one of said columns;

second program indicia in said control memory for enabling said programmed processor to examine said unformatted text data formattable in said columns of said logical page and to initially select a single depth for all of said columns for said logical page, said single depth being intermediate in depth of the depths of the shortest and longest ones of said columns;

third program indicia in said control memory for enabling said programmed processor to adjust the depths of all of said columns of said logical page to said single depth by compressing the depths of said columns longer than said single depth and expanding the depths of said columns shorter than said single depth; and

fourth program indicia in said third program indicia for enabling said programmed processor while adjusting the depths of said columns on said given logical page to examine skips, blank lines, lead outs and interline spacings as separate classes, respectively, of vertical space for vertical justification in each said column being vertically justified and to assign a priority of adjustment to each said class of vertical space such that each class is a priority class of adjustment and enabling said programmed processor to vertically adjust all areas in a given column within a given priority class of adjustment such that all areas so classified will be vertically adjusted in depth before any areas in a class of a lower priority.

4,608,665

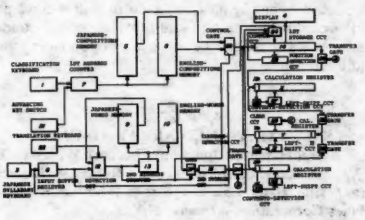
SENTENCE MODIFIABLE ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER

Kunio Yoshida, 2541-10, Hari Tsuge-mura, Yamabe-gun, Nara-ken, Japan

Continuation of Ser. No. 117,003, Jan. 30, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,727

Int. Cl.[4] G06F *9/00*

U.S. Cl. 364—900 **8 Claims**



1. An electronic dictionary and language interpreter device wherein a first word or words represented in a first language are entered to obtain a second word or words represented in a second language equivalent to the first word or words, comprising:

first means for generating a sentence written in either the first language or the second language, said first means including first memory means for storing a plurality of sentences in the first language, the sentences each having provision therein for inserting at least one selected word to be thereby completed, second memory means for storing a like plurality of sentences in the second language, each sentence in the second language being a translation of sentences in the first language stored in the first memory means, and first selecting means for selecting an equivalent one of the sentences stored in said first and second memory means and for generating the selected sentence in response thereto;

second means for generating one or more words written in the corresponding first language or second language, respectively, the one or more words being capable of being added to the selected sentence to form a complete sentence, said second means including third memory means for storing a plurality of words in said first language, fourth memory means for storing a like plurality of words in said second language, each word in the second language being a translation of a word in the first language stored in the third memory means, and second selecting means for selecting one or more of the equivalent words stored in the third and fourth memory means and for generating the selected words in response thereto; and

adding means for adding the one or more words developed from the second means for generating into the selected sentence generated from the first means for generating thereby obtaining a complete sentence.

4,608,666

SEMICONDUCTOR MEMORY

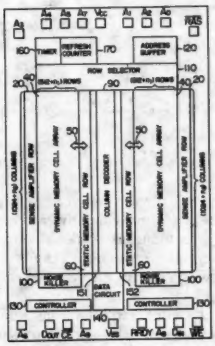
Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 20, 1984, Ser. No. 602,449

Claims priority, application Japan, Jun. 24, 1983, 58-113924

Int. Cl.[4] G11C *13/00*

U.S. Cl. 365—182 **4 Claims**



2. In a semiconductor memory comprising a dynamic memory cell array wherein dynamic memory cells for storing information therein are arranged in row and column directions in a matrix manner, word lines commonly connected in the row direction to said dynamic memory cells in said dynamic memory cell array, bit lines commonly connected in the column direction to said dynamic memory cells in said dynamic memory cell array, and a sense amplifier row having sense amplifiers for sense-amplifying a potential difference between paired bit lines,

the improvement comprising:

a static memory cell row having static memory cells corresponding to said dynamic memory cells located in the row direction in said dynamic memory cell array;

transfer gate means for transferring information between said static memory cells in said static memory cell row and the corresponding dynamic memory cells;

row selection means for selecting a word line of a dynamic memory cell row of a desired row address in said dynamic memory cell array; and

column selection means for selecting a static memory cell of a desired column address in said static memory cell row,

thereby transferring the information of said dynamic memory cell row commonly connected to said word line selected by said row selection means to said static memory cell row with said transfer gate means, effecting a read/-write operation with respect to the static memory cell of said desired column address through a data line connected

by said column selection means, transferring the information of said static memory cell row, to which said read/write operation has been effected, to said dynamic memory cell row commonly connected to the word line selected by said row selection means with said transfer gate means, and rewriting the information to said dynamic memory cell row.

4,608,667

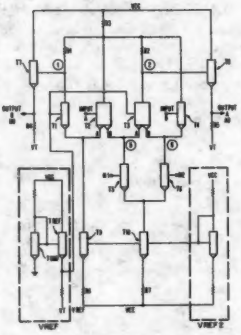
DUAL MODE LOGIC CIRCUIT FOR A MEMORY ARRAY

Robert L. Barry, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1984, Ser. No. 611,564

Int. Cl.[4] G11C *7/00*; H03K *19/086*

U.S. Cl. 365—189 **12 Claims**



1. A dual mode circuit provided by cascode collector dotted current switch circuit means; said cascode collector dotted current switch circuit means comprising:

first current switch circuit means adapted to receive a first binary input (A);

second current switch circuit means interconnected with said first current switch circuit means, said second current switch circuit means being adapted to receive a second binary input (B);

third current switch circuit means interconnected with said first and second current switch circuit means, said third current switch circuit means being adapted to receive binary inputs M1 and M2, where M1 is the binary complement of M2; and

first and second output means connected to said first and second current switch circuit means, said first and second output means respectively rendering a binary output A0 and a binary output B0, whereby when input M1 is high compared to input M2 outputs A0 and B0 are solely controlled by input A and when input M2 is high compared to M1, input B will control output B0 and input A will control output A0.

4,608,668

SEMICONDUCTOR DEVICE

Jun-ichi Ohno, Yokohama, and Satoshi Konishi, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 409,613, Aug. 19, 1982, abandoned. This application Aug. 6, 1985, Ser. No. 763,088

Claims priority, application Japan, Sep. 3, 1981, 56-138829; Apr. 12, 1982, 57-60537

Int. Cl.[4] G11C *11/42*; H01L *21/82*

U.S. Cl. 365—200 **14 Claims**

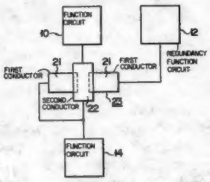
1. A semiconductor device capable of structural modification responsive to the output of a radiating means, comprising:

a plurality of circuit means; and

switching means for electrically connecting a first pair of said circuit means and simultaneously disconnecting a second pair of said circuit means, said switching means including:

a semiconductor substrate of a first conductivity type;

a plurality of first conductor means each having a pair of first semiconductor regions of the second conductivity type which are formed at a predetermined interval in the surface region of said semiconductor region of the first conductivity type which is formed between said first semiconductor regions, said first conductor means being electrically nonconductive in an initial state, the pair of first semiconductor regions of one of said first conductor means being connected to said first pair of said circuit means;



a plurality of insulating means formed on at least the second semiconductor regions, respectively; and

a plurality of second conductor means formed on said insulating means, extending across said first conductor means and being electrically conductive in the initial state, each of said plurality of second conductor means and the corresponding second semiconductor region being formed to receive the output of said radiating means so as to electrically disconnect each of said plurality of second conductor means thereby simultaneously electrically connecting said first semiconductor regions arranged at the ends of said second semiconductor region, one of said second conductor means being connected to said second pair of said circuit means, each of said first and second conductor means being arranged between a corresponding pair of said circuit means.

4,608,669

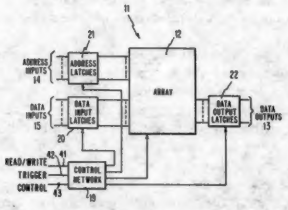
SELF CONTAINED ARRAY TIMING

Walter S. Klara, Hopewell Junction; Theodore W. Kwap, Brewster; Victor Marcello, Stormville, and Robert A. Rasmussen, LeGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1984, Ser. No. 611,817

Int. Cl.[4] G11C *7/00*

U.S. Cl. 365—201 **7 Claims**



1. A process for testing a read/write memory array embedded within an integrated circuit device, said integrated circuit device including, a READ/WRITE memory array, address latch circuit means having an output connected to said READ/WRITE memory array, data input latch circuit means

having an output connected to said READ/WRITE memory array, data output latch circuit means having an input connected to said READ/WRITE memory array, timing control network circuit means, said timing control network circuit means having a trigger signal chip input, a READ/WRITE control chip input and first, second, third and fourth outputs, said first, second, third and fourth outputs of said timing control network circuit means being respectively connected to said address latch circuit means, said data input latch circuit means, said READ/WRITE memory array and said output latch circuit means, said process comprising the following steps:

(a) select the WRITE mode for the array by conditioning the READ/WRITE control chip input of the timing control network;

(b) place the desired memory address on address input lines of the address latch circuit means;

(c) place the desired data bits on data input lines of the data input latch circuit means; and,

(d) provide a trigger signal from off chip to the trigger signal chip input of the timing control network

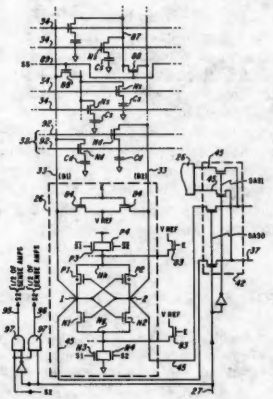
whereby the WRITE timing sequence for the memory array will be automatically generated by the timing control network and the desired data will be written into the memory array at the desired address.

4,608,670

CMOS SENSE AMPLIFIER WITH N-CHANNEL SENSING

Charvaka Duvvury, Missouri City, and Adin E. Hyslop, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1984, Ser. No. 636,939
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—205 **15 Claims**



1. A sense amplifier circuit for a memory device, comprising:

a pair of bit lines, and a plurality of memory cells connected to each of said bit lines,

a cross-coupled latch circuit including a first pair of N-channel transistors and a second pair of P-channel transistors, each transistor having a source-to-drain path and a gate, the source-to-drain paths of the first pair of N-channel transistors connected between a pair of sense nodes and grounding means, the source-to-drain paths of the second pair of P-channel transistors connected between said sense nodes and a voltage supply node,

said grounding means including a third pair of N-channel transistors, each said transistor of the third pair having a source-to-drain path and a gate, said voltage supply node being connected to a positive voltage supply by a source-to-drain path of a second P-channel transistor,

coupling means separately connecting said pair of sense nodes to said pair of bit lines,

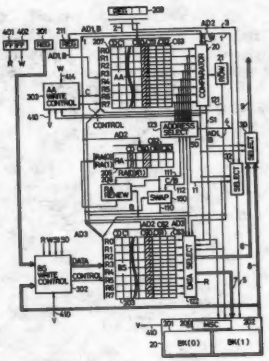
and control means activating said gate of one of third pair of transistors at a first time in an active cycle when said memory cells are activated for coupling to said bit lines, and then activating said gate of the other of said third pair at a second time when said grounding means is activated, while maintaining said voltage supply node at zero voltage, then activating after said first time in said operating cycle the gate of said second P-channel transistor.

4,608,671

BUFFER STORAGE INCLUDING A SWAPPING CIRCUIT

Tsuguo Shimizu, Sayama; Kenichi Wada, Zama; Yooichi Shintani, Kokubunji, and Akira Yamaoka, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,518
Claims priority, application Japan, Apr. 30, 1982, 57-71211
Int. Cl.[4] G11C *8/00*
U.S. Cl. 365—230 **4 Claims**



1. A buffer storage system comprising:

first storage means having a plurality of addressable storage locations for storing data signals;

buffer storage means having a plurality of addressable storage locations and being connected to said first storage means for storing at least some of the data signals stored by said first storage means;

first means for holding signal pairs including an address signal and a control signal, each signal pair corresponding to the data stored in a respective one of the storage locations of said buffer storage means, said address signal designating an address of a storage location within said first storage means from which or into which the corresponding data signal was fetched or is to be stored, and said control signal having a first or second value depending upon whether or not the corresponding data signal needs to be stored into said first storage means when the data signal is to be replaced in said buffer storage means by a new data signal;

second means for indicating plural candidate replacement locations within said buffer storage means so that any one of said plural replacement locations can be used as a storage location for a new data signal, including means for changing said indicated candidate replacement locations according to a predetermined replacement algorithm in response to an applied read or write request;

third means connected to respond to said plural indicated candidate replacement locations provided by said second

means for reading out of said first means signal pairs each consisting of an address signal and a control signal respectively corresponding to said indicated candidate replacement locations;

fourth means connected to said second and third means for selecting one of said candidate replacement locations for which the control signal held by said first means has the second value;

fifth means connected to said buffer storage means and responsive to an applied read request for reading out of said first storage means a data signal requested by said read request to supply said read out data signal and for writing said read out data signal into said selected candidate replacement location of said buffer storage means without writing a data signal already stored therein into said first storage means; and

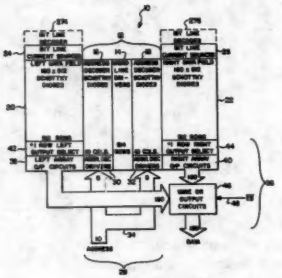
sixth means responsive to said selection of said candidate replacement location for writing into said first means a signal pair consisting of the address signal accompanying said said request and a control signal having the second value as a signal pair for the selected candidate replacement location.

4,608,672

SEMICONDUCTOR MEMORY

Peter C. T. Roberts, Plymouth, and Tho T. Vu, Fridley, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 14, 1983, Ser. No. 513,872
Int. Cl.⁴ G11C *8/00*
U.S. Cl. 365—230 **4 Claims**



1. An electronic device, comprising:

first, second and third sets of Schottky diodea;

first, second, third and fourth sets of electrical current conductive paths wherein said first set of Schottky diodes and said first and said second sets of electrical conductive paths are capable of storing data in digital form, and said second set of Schottky diodes and said second and third sets of electrical conductive paths are capable of storing data in digital form;

a plurality of ISL gates wherein said ISL gates, said third set of Schottky diodes and said third and fourth sets of conductive paths are adapted to allow the extraction of at least some of said stored data in response to particular electrical signals impressed onto said third and fourth sets of electrical conductive paths, wherein each of said ISL gates includes an n-p-n transistor and only one of said electrically conductive paths of said second set of electrically conductive paths is directly electrically connected to the collector of said n-p-n transistor at a first node and only one of said electrically conductive paths of said fourth set of electrically conductive paths is directly electrically connected to the base of said n-p-n transistors at a second node; and

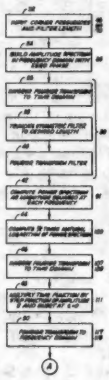
means for impressing said particular electrical signals onto said third or fourth electrical current conductive paths.

4,608,673

MINIMUM PHASE BANDPASS FILTERING OF SEISMIC SIGNALS

Gregory D. Lazear, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed May 11, 1983, Ser. No. 493,502
Int. Cl.⁴ G01V *1/28*
U.S. Cl. 367—43 **9 Claims**



1. A method of filtering crosscorrelated seismic data comprising:

constructing a selected bandpass filter operator in the frequency domain having zero phase;

transforming said bandpass filter operator and obtaining a minimum phase spectrum, and forming a frequency domain filter operator with the same amplitude spectrum but minimum phase;

again transforming said frequency domain filter operator to the time domain to form said minimum phase bandpass filter operator; and

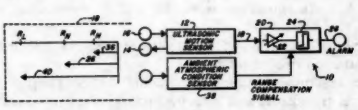
convolving said minimum phase bandpass filter operator with said crosscorrelated seismic data to define the data first arrival time.

4,608,674

CONSTANT RANGE ULTRASONIC MOTION DETECTOR

John K. Guscott, Lynnfield, Mass., assignor to American District Telegraph Company, New York, N.Y.

Filed Aug. 6, 1982, Ser. No. 406,020
Int. Cl.⁴ G08B *13/16, 29/00*
U.S. Cl. 367—93 **22 Claims**



1. An intrusion detection system, comprising:

an ultrasonic motion detector for providing an alarm signal in response to object motion within a range that varies from nominal range with the variation between ambient atmospheric condition and nominal atmospheric condition of the atmospheric sound propagation medium;

an ambient atmospheric condition sensor for providing sen-

sor signals which respectively depend upon at least two distinct ambient atmospheric conditions of the atmospheric sound propagation medium;

means responsive to said sensor signals for combining said sensor signals to provide a range compensation signal which depends on the difference between nominal and ambient atmospheric conditions; and

means for applying said range compensation signal to said ultrasonic motion detector to adapt said effective range to said nominal range.

4,608,675

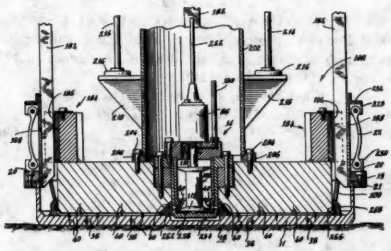
LAND SEISMIC SOURCE METHOD AND APPARATUS

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Technology Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 57,211, Jul. 11, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,669

Int. Cl.[4] G01V *1/04*

U.S. Cl. 367—189 5 Claims



1. A land seismic source for transmitting powerful seismic impulses into the earth comprising:

an air gun housed in a container means having a top and a bottom adapted to be charged with high pressure compressed air through the top of said container and discharged through the bottom of said container,

a ground contact plate mounted below said air gun, said ground plate being intended to be positioned in intimate contact with the earth which is to receive the seismic impulse imparted thereto by said source,

said plate having a large area upper surface,

a reaction mass encircling said air gun,

said reaction mass having a large area lower surface and initially being positioned with its lower surface in face-to-face contact with the upper surface of said ground plate over 90% of the upper surface of said ground plate forming an interface region therebetween,

said air gun having discharge ports in the bottom of said container communicating with said interface region in which said reaction mass is initially in at least 90% contact with said ground plate,

mounting means for movably mounting said ground plate relative to said reaction mass, and

means for firing said air gun for discharging said high pressure compressed air radially outwardly from said discharge ports of said encircled air gun into said interface region between the lower surface of said reaction mass and the upper surface of said ground plate for separating said ground plate from said reaction mass thereby driving said ground plate downwardly for transmitting a powerful seismic impulse into the earth.

4,608,676

APPARATUS FOR OPTICALLY REPRODUCING AN INFORMATION SIGNAL FROM A RECORD DISK

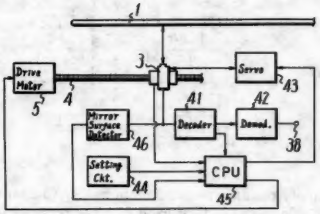
Tadao Yoshida, Kawasaki, and Yoshiaki Haneda, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 382,298, May 26, 1982, abandoned. This application Mar. 26, 1985, Ser. No. 715,780

Claims priority, application Japan, May 28, 1981, 56-81532

Int. Cl.[4] G11B *21/08*

U.S. Cl. 369—32 6 Claims



1. A method of moving pick-up means of an optical reproducing apparatus to a position corresponding to a desired address of a record disk wherein said record disk is rotated at a constant linear velocity with respect to said pick-up means, said record disk having information and address signals recorded in an information area thereon, comprising the steps of:

producing a desired address signal corresponding to said desired address;

generating address signals by the steps of at least generating address signal for radially partitioning said information area into two radially equal successive first subdivisions, partitioning each of said radially successive first subdivisions into two radially equal successive second subdivisions, and partitioning each of said radially successive second subdivisions into two radially equal successive third subdivisions;

moving said pick-up means to a first intermediate position between an adjacent two of said radially successive first subdivisions at a speed faster than normal reproducing speed;

reproducing the address signal at said first intermediate position of said pick-up means between said adjacent two first subdivisions;

comparing said address signal reproduced at said first intermediate position with said desired address signal;

further moving said pick-up means at a speed faster than said normal reproducing speed in a direction and by an amount determined by said comparing step to a second intermediate position which is between an adjacent two of said radially successive second subdivisions located within one of the radially successive first subdivisions between which said pick-up means was last positioned; and

repeating the steps of reproducing, comparing and further moving until said pick-up means is moved to said position corresponding to said desired address.

4,608,677

MAGNETIC BUBBLE STORE

Jean-Marc Fedeli, St. Egreve, and Hubert Jouve, Biviers, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 4, 1984, Ser. No. 596,701

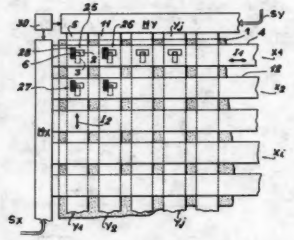
Claims priority, application France, Apr. 8, 1983, 83 05791

Int. Cl.[4] G11C *19/08*

U.S. Cl. 365—19 6 Claims

1. Magnetic bubble store incorporating a magnetic garnet layer (1), in which can be formed magnetic bubbles localized respectively by cells, each cell having a pair of localization windows (2, 3) respectively cut from conductive strips (4, 5) of

a pair of conductive strips, said strips being insulated from one another and from the garnet and can be respectively traversed by currents (I_1, I_2) for displacing the bubble possibly located in said cell, as well as means (21) for detecting each bubble, the strips of the pair of strips having directions (X, Y) perpendicular to one another, the currents (I_1, I_2) in said strips being



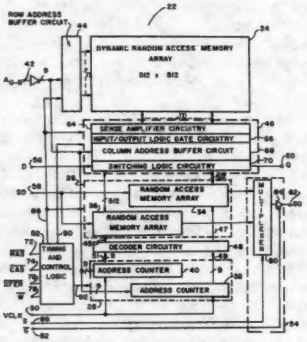
respectively parallel to said directions (X, Y) characterized in that the windows (2, 3) of each pair are rectangular and perpendicular to one another, one of the windows (3) having only at an extremity a surface portion (7) common to the other window (2), in the vicinity of the median part of said other window (2).

4,608,678

SEMICONDUCTOR MEMORY DEVICE FOR SERIAL SCAN APPLICATIONS

N. Bruce Threewitt, Fremont, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 23, 1983, Ser. No. 564,969
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—189 **13 Claims**



6. An improved semiconductor memory device for use in serial scan applications, said semiconductor memory device having a random access data input terminal, a serial data input terminal, a random access data output terminal, and a serial data output terminal, said semiconductor memory device further comprising:

(a) a plurality of address input terminals for receiving address codes indicating cell locations within said semiconductor memory device;

(b) a row address buffer circuit coupled to said address input terminals, said row address buffer circuit disposed for storing and decoding row address codes received from said address input terminals;

(c) a main memory means for storing data;

(d) a secondary memory means for storing data transferred from, or to be transferred to, said main memory means;

(e) addressing means having a plurality of input terminals coupled to the address input terminals, and having a timing signal input terminal, and further having a plurality of output terminals, said addressing means disposed for providing said secondary memory means with a start address within the main memory means, said start address indicating a predetermined bit position within the main memory means at which a transfer of data is to begin, so as to allow said transfer of data to begin at any desirable predetermined bit-position in the secondary memory means;

(f) logic circuit means for controlling the timing and switching of said semiconductor memory device, said logic circuit means for controlling the timing and switching of said semiconductor memory device having a first output terminal coupled to said row address buffer circuit, said first output terminal also being coupled to said secondary memory means and being further coupled to said addressing means, said logic circuit means for controlling the timing and switching of said semiconductor memory device also having a second output terminal; and

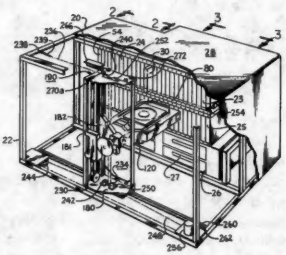
(g) means for enabling the output of serial data from said semiconductor device, said means for enabling the output of serial data being coupled to the serial data output terminal.

4,608,679

OPTICAL STORAGE AND RETRIEVAL DEVICE

Michael Rudy, Huntington Beach; Paul Cary, and Arthur A. Roth, both of Santa Ana, all of Calif., assignors to Filenet Corporation, Costa Mesa, Calif.

Filed Jul. 11, 1984, Ser. No. 629,693
Int. Cl.[4] G11B *5/48, 17/00*
U.S. Cl. 369—36 **25 Claims**



1. A method of moving video disk cartridges, the cartridges being contained in a plurality of containing apertures, an alignment target being placed adjacent to, and associated with a number of said apertures, said cartridges having an engaging aperture at an edge of said cartridge, comprising:

locating the position of each of said alignment targets with respect to a reference position to locate the position of each of said containing apertures associated with said alignment targets;

storing information locating said alignment target positions in a computer;

positioning a rotatable transport carriage at the alignment target position stored in said computer memory for a first of said containing apertures, said first aperture containing a cartridge therein;

verifying the alignment of said rotatable transport carriage by sensing said alignment target adjacent said first aperture, and if not sensed, incrementally repositioning said rotatable transport carriage and sensing for said alignment target until said target is sensed and the alignment of said rotatable transport carriage is verified;

extending an engaging member from said rotatable transport carriage;

engaging said engaging aperture with said engaging member;

retracting said engaging member and the engaged cartridge into said rotatable transport carriage;

detecting when said engaging member and the engaged cartridge are retracted into said rotatable transport carriage a predetermined distance;

containing said cartridge in said rotatable transport carriage during transportation and rotation of said rotatable transport carriage and cartridge;

transporting and rotating said rotatable transport carriage and cartridge to the position of a second alignment target as stored in said computer;

verifying the alignment of said rotatable transport carriage by sensing said second alignment target, and if such verification is not sensed, incrementally repositioning said rotatable transport carriage and sensing for said alignment target, said repositioning and sensing being repeated until the location of said alignment target is verified; and

extending said cartridge from said rotatable transport carriage.

4,608,680

OPTICAL DISC PLAYER WITH TILT CORRECTION

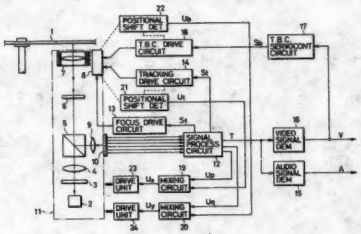
Hajime Yano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 8, 1984, Ser. No. 577,989

Claims priority, application Japan, Feb. 10, 1983, 58-19732

Int. Cl.[4] G11B *7/00*

U.S. Cl. 369—44 **11 Claims**



1. An optical disc player for reproducing optically an information signal recorded in a record track formed on a recording surface of a disc, comprising:

light source means for generating a light beam,

optical means including an object lens for directing said light beam to the recording surface of the disc and allowing a reflected light beam from the recording surface of the disc to pass therethrough,

photodetecting means for receiving said reflected light beam through said object lens to produce in response thereto a detected output from which said information signal can be obtained, and

control means comprising first detecting means for producing a first signal varying in response to variations of a position where said light beam impinges on the recording surface of the disc, second detecting means responsive to the detected output of said photodetecting means for producing a second signal varying in response to variations of a position on said photodetecting means whereat said reflected light beam is received, and mixing means for mixing said first and second signals so as to cancel a component of said second signal which results from the variations of the position where said light beam impinges on the recording surface of the disc and thereby to produce a third signal with which an inclination of an optical axis of said light beam relative to a line perpendicular to said recording surface of the disc at a point where said light beam is incident upon the recording surface of the disc can be detected.

4,608,681

CARTRIDGE LOADING APPARATUS

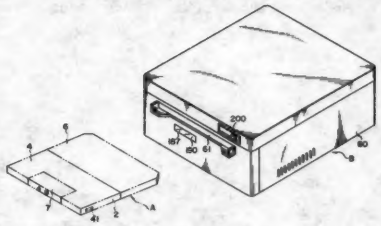
Masao Shiosaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 23, 1984, Ser. No. 674,299

Claims priority, application Japan, Nov. 26, 1983, 58-222706

Int. Cl.[4] G11B *25/04*; B65D *85/02*

U.S. Cl. 369—77.2 **20 Claims**



1. An apparatus for loading a cartridge which cartridge encloses an information recording disk therein, includes first and second cases each adapted for opposed sliding movement selectively between open and closed positions of said cartridge along a plane substantially coinciding with that of said disk, and is adapted to be in a closed state to completely enclose and seal the disk when the first and second cases are by said sliding movement brought into contact with each other and in an opened state to expose an area of the disk between the first and second cases when the first and second cases are by said sliding movement separated from each other,

said apparatus comprising:

a housing having a port at one side of said housing for receiving and discharging the cartridge therethrough;

cartridge handling means, disposed in said housing, for receiving the cartridge from said port in the closed state, for opening the cartridge by separating by said sliding movement the first and second cases from each other to expose the area of said information recording disk, for closing the cartridge by bringing by said sliding movement the first and second cases into contact with each other, and for ejecting at least part of said closed cartridge outside of said housing through said port; and

disk holding means, disposed in said housing, for holding the disk after the opening of said cartridge by said cartridge handling means.

4,608,682

OPTICAL TIME-DIVISION SWITCHING SYSTEM EMPLOYING OPTICAL BISTABLE DEVICES

Kunio Nagashima, and Michikazu Kondo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 555,927

Claims priority, application Japan, Nov. 29, 1982, 57-208873; Dec. 10, 1982, 57-216708

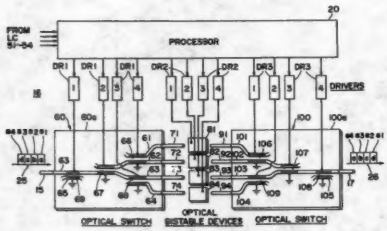
Int. Cl.[4] H04B *9/00*; H04J *3/00*

U.S. Cl. 370—4 **6 Claims**

1. An optical switching system having control means for generating a switching instruction in response to a selection signal from a plurality oflines or trunks, means for multiplexing signals from said lines or trunks onto different time slots and applying the multiplexed signals to a common incoming optical medium, and means for demultiplexing said multiplexed signals from a common outgoing optical medium and applying the demultiplexed signals to said lines or trunks, said system comprising:

a plurality of optical bistable devices each having a hysteretic relationship between an optical input supplied thereto and an optical output delivered therefrom, each of said bistable devices being capable of assuming a high optical output state in response to the simultaneous presence of energy and an optical input supplied thereto and maintaining said high optical output state in the exclusive presence of said energy and capable of assuming a low optical output state in response to the simultaneous absence of said energy and said optical input;

first optical switching means responsive to said switching instruction for selectively switching said multiplexed signals from said common incoming optical medium to



said optical bistable devices as said optical input to individually store said signals therein;

second optical switching means responsive to said switching instruction for selectively switching said stored signals from said optical bistable device to said outgoing optical medium; and

means for coupling said energy from an external source to said bistable devices in response to said switching instruction to cuase said bistable devices to assume said high optical output state to store said signals and decoupling said energy from bistable devices in response to said switching instruction to cause said bistable devices to assume said low optical output state to erase said stored signals.

4,608,683

TEST APPARATUS FOR DIGITAL SPEECH INTERPOLATOR FOR USE IN TIME DIVISION MULTIPLE ACCESS SCHEME

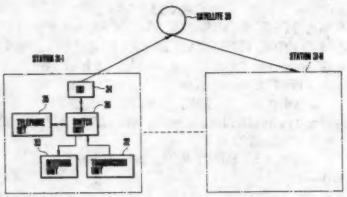
Selichiro Shigaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 25, 1984, Ser. No. 623,870

Claims priority, application Japan, Jun. 25, 1983, 58-113626

Int. Cl.[4] H04J *1/16, 3/14;* **G01R** *31/28;* **G06F** *11/00*

U.S. Cl. 370—13 **6 Claims**



1. An apparatus for testing the operation of a digital speech interpolator provided in a transmitting station and a receiving station in a time division multiple access scheme (DSI/TDMA), said apparatus comprising a transmitting unit and a receiving unit, said transmitting unit at the transmitting station comprising:

first means for generating a pseudo random code for each one of a plurality of channels;

second means for generating a channel identifying signal;

third means for generating a fixed signal having a level lower than a detectable level of a tone detector of said digital speech interpolator (DSI) on the transmitting station;

fourth means responsive to said second means for generating a pseudo tone burst signal for each channel;

fifth means connected to said first means and being supplied with said pseudo random code, connected to said second means and being supplied with said channel identifying signal, connected to said third means and being supplied with said fixed signal, and connected to said fourth means and being controlled by said pseudo tome burst signal, for generating and supplying a time division multiplex signal to said DSI at the transmitting station; and

said receiving unit at the receiving station comprising:

means supplied with said signal sent form said DSI at the transmitting station for detecting said pseudo random code, said channel identifying signal and said fixed signal.

4,608,684

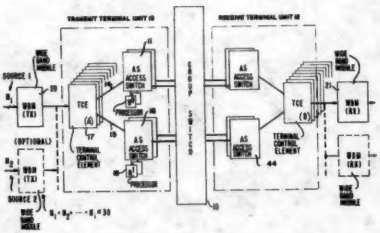
DIGITAL SWITCHING SYSTEMS EMPLOYING MULTI-CHANNEL FRAME ASSOCIATION APPARATUS

Daniel C. Upp, Southbury, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,342

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—58 **27 Claims**



1. In a digital switching system of the type having a main switch, where a plurality of data lines are coupled to said main switch via a line unit with said switch controlled for making connections between pairs of said data lines, where each connection between data lines may take a different path via said main switch and each path is of a given limited bandwidth and where each different path may be associated with a different transit time delay and due to such time delays multi-path connections cannot be made to increase said limited bandwidth with said data transmitted in separate channels each of a given word length and where a given number of channels constitute a frame, the combination therewith of multi-channel frame association apparatus for allowing multi-channel linking paths to increase the bandwidth of said system by compensating for said different time delays, comprising:

first means associated with each of said lines to form a wide-band word format for transmission through said main switch to a receiving line, with a first given number of bits of said word indicative of data to be transmitted and with a second number of bits indicative of a tagging number manifesting a frame number for each of said words,

second means for indexing said tagging number contained in said second number of bits during each frame,

decoder means located at each line and operative when said line is receiving data to decode said second given number of bits to provide a frame number for said word,

memory means coupled to said decoder means for storing said data associated with said words according to said frame number as decoded, said memory means including

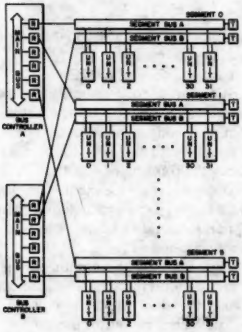
logic means operative to resassemble each word according to said frame number being the same, whereby common data can be transmitted over N given paths of said system according to said tagging number to allow a plurality of words with the same tagging signal to be reassembled at said lines receiving said data and independent of the delays of said N given paths to thereby provide an increase in bandwidth of N times said limited bandwidth, where N is a positive integer.

4,608,685

PACKET AND CIRCUIT SWITCHED COMMUNICATIONS NETWORK

Prem C. Jain, Fremont, and Frederick Enns, Menlo Park, both of Calif., assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 30, 1984, Ser. No. 605,721
Int. Cl.[4] H04J *3/02*
U.S. Cl. 370—85 **14 Claims**



1. A telecommunications switching network comprising:
a plurality of units including a call controller unit;
a first data bus comprising a group of data leads being connected in parallel to each of the units, said data leads being commonly available for signal transmission of call control signals between the call controller unit and others of said plurality of units, and for signal transmission of communications signals between said others of said plurality of units; and
a first bus controller means connected to each of the units for arbitrating access to the data leads by the units, so that only one of said units may transmit signals at any one instant in time.

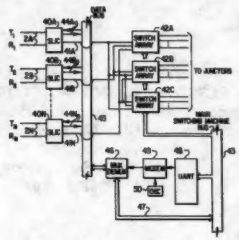
4,608,686

TWO WIRE VOICE AND DATA SUBSCRIBER LOOP

John A. Barsellotti, Kanata, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed Sep. 23, 1982, Ser. No. 422,188
Claims priority, application Canada, Feb. 22, 1982, 396694
Int. Cl.[4] H04J *1/00, 1/14;* H04M *11/00*
U.S. Cl. 370—69.1 **27 Claims**

1. A bidirectional two wire combined voice and data transmission system comprising:
(a) a telephone switching exchange including voice signal switching means and a bus system to which a switching exchange controller is connected, the voice signal switching means having a defined audio frequency transmission bandwidth,
(b) one or more subscribers' sets for generating audio frequency analog signals for transmission to the switching exchange,
(c) means associated with each subscriber's set for generating serial digital signals for transmission to said switching exhcange,
(d) means for amplitude modulating a carrier signal with said digital signals, the carrier signal being at a frequency higher than the upper limit of said defined bandwidth, and at least twice the highest frequency of said analog signals,
(e) means for combining the modulated digital signals and said analog signals,
(f) one or more two wire subscribers' lines interconnecting the subscribers' sets and said switching exchange,



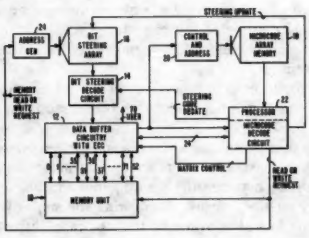
(g) means for applying the combined signals to one end of each of the subscribers' lines,
(h) means for receiving the combined signals at the switching exchange, including multiplexing and demodulating means for reconstructing the digital signals, and applying them to said bus system, and including means for filtering the analog signals and applying them to the voice signal switching means.

4,608,687

BIT STEERING APPARATUS AND METHOD FOR CORRECTING ERRORS IN STORED DATA, STORING THE ADDRESS OF THE CORRECTED DATA AND USING THE ADDRESS TO MAINTAIN A CORRECT DATA CONDITION

Patrick F. Dutton, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1983, Ser. No. 531,793
Int. Cl.[4] G06F *11/20*
U.S. Cl. 371—10 **9 Claims**



1. A system for correcting errors in stored data and for maintaining the correct condition of said data including a memory unit means responsive to a memory unit means read or write request signal for storing data and corrected data, said data being stored in a plurality of memory chips, said corrected data being stored in a plurality of spare memory chips, and error detection and correction means connected to the memory unit means for detecting the existence of errors in said data stored in said plurality of memory chips and for correcting the erroneous data stored in said memory chips, comprising:
error identity recording means connected to and physically separate from said memory unit means, connected to said

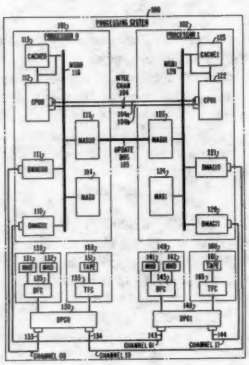
error detection and correction means and responsive to said memory unit means read or write request signal energizing said memory unit means for storing a plurality of addresses therein indicative of a corresponding plurality of locations within said memory unit means wherein said erroneous data is stored.

4,608,688

PROCESSING SYSTEM TOLERANT OF LOSS OF ACCESS TO SECONDARY STORAGE

Robert C. Hansen, Wheaton; Calvin J. Richardson, Naperville, and David A. Schmitt, Glen Ellyn, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1983, Ser. No. 566,021
Int. Cl.[4] G06F *11/16*
U.S. Cl. 371—11 **38 Claims**



1. In a processing system that includes

a plurality of secondary memory means each storing a replica of information for use by the processing system, including designated information,

main memory means for storing selected portions of the information, and

means for transferring portions of the information between the main memory means and the secondary memory means,

a method of protecting at least some system operating capability against loss of information transfer of secondary capability between the main memory means and the plurality memory means, comprising the steps of:

detecting loss of information transfer capability between the main memory means and all but at least one of the secondary memory means;

in response storing all designated information in the main memory means; and

preventing removal of the designated information from the main memory means while permitting information transfer between the main memory means and the at least one secondary memory means and prior to loss of information transfer capability between the main memory means and the at least one secondary memory means;

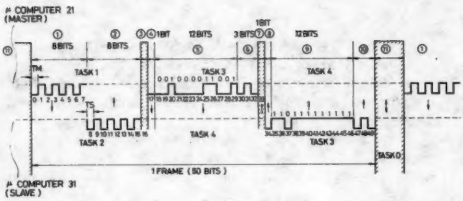
whereby the designated information remains available to the process system in the main memory means upon loss of information transfer capability between the main memory means and the plurality of secondary memory means.

4,608,689

DATA PROCESSING AND TRANSFER APPARATUS

Yukio Sato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1982, Ser. No. 444,984
Claims priority, application Japan, Dec. 4, 1981, 56-194449; Dec. 11, 1981, 56-198382; Dec. 11, 1981, 56-198385
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—15 **34 Claims**



1. A data transfer apparatus adapted to transfer data to another apparatus, comprising:

a computer for processing data;

communication means for transmitting the data processed by said computer to said other apparatus in a plurality of predetermined conditions of data transmission;

means associated with said other apparatus and being operable prior to the transmission of the processed data by way of said communication means to said other apparatus, for discriminating a data processing characteristic of said other apparatus, said characteristic being associated with data transmission; and

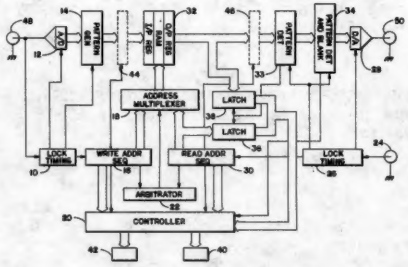
means associated with said communication means for selecting one of the plural data transmission conditions in accordance with the data processing characteristic discriminated by said discriminating means to enable data transmission among the apparatus.

4,608,690

DETECTING IMPROPER OPERATION OF A DIGITAL DATA PROCESSING APPARATUS

John L. Judge, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 444,766, Nov. 26, 1982, abandoned.
This application Jun. 10, 1985, Ser. No. 743,266
Int. Cl.[4] G11C *29/00*; G06F *11/00*
U.S. Cl. 371—21 **7 Claims**



6. In combination, digital memory apparatus operating to receive a digital signal having a succession of sequences of p digital words, where p is an even number and greater than zero, and test apparatus for determining whether the memory apparatus is operating properly, the memory apparatus comprising a memory device having first through mth separately addressable memory locations (where m is greater than p and

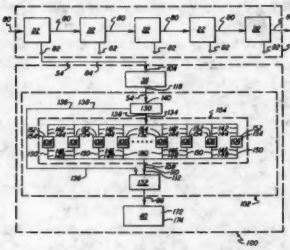
is not an integral multiple of p) each memory location storing a digital word having n binary digits, input means for receiving a succession of sequences of p digital input words and writing the succession of sequences of p digital words into the memory device sequentially and repeatedly, and output means for reading digital words from the memory device sequentially and repeatedly, and the test apparatus comprising means operating during normal operation of the memory apparatus for modifying the succession of sequences of p digital input words received by the input means by replacing the qth word of each sequence by a predetermined digital test word having n binary digits, so that the modified sequences are written into the memory device sequentially and repeatedly, and comparison means for determining whether the word read out of the memory device as the qth word of each sequence is identical to the predetermined digital test word.

4,608,691

SIGNATURE ANALYZER CARD

James Lynch, San Jose, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed Mar. 19, 1984, Ser. No. 591,090
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—25 **31 Claims**



1. A signature analyzer card comprising, in combination:

an input buffer connected to an input data bus in electrical communication with a circuit card under test, said input buffer for serially receiving from said input data bus a first plurality of words and for providing a plurality of buffer output words, each of said first plurality of words and each of said plurality of buffer output words being sixteen bits wide, said first plurality of words representing a plurality of binary data located within said circuit card under test;

a cycle redundancy check generator connected to the input buffer and including a plurality of cycle redundancy circuits, each of said cycle redundancy circuits receiving one bit of each of said words of said plurality of buffer output words through an input lead, each bit of each buffer output word forming one bit of one of a plurality of serial binary bit streams, the logical state of each of said cycle redundancy circuits being dependent upon the logical value of each bit of each of said serial binary bit stream transmitted to each of said plurality of cycle redundancy circuits for providing a plurality of compressed serial binary bits on an output lead of each of the cycle redundancy circuits forming an output signature transmitted to a signature bus, said output signature having fewer binary words than said first plurality of words received on said input data bus;

a control block electrically connected to the cycle redundancy check generator for providing a plurality of timing control signals to the signature analyzer card;

an in strobe multiplexer electrically connected to the control block for selecting a first of said plurality of timing control signals, said first timing control signal being comprised of four binary bits and being transmitted to a multiplexer decoder for decoding said four binary bits and for providing a plurality of in strobe signals for enabling said plurality of binary data onto said input data bus; and

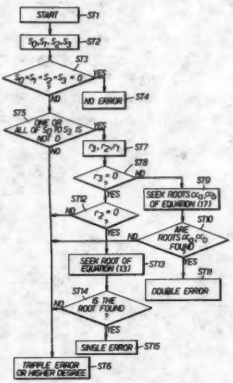
an output multiplexer connected to said signature bus and to a bypass bus, said signature bus transporting said output signature from the cycle redundancy check generator to the output multiplexer and said bypass bus transporting said plurality of buffer output words from the input buffer to the output multiplexer, the output multiplexer for selecting the signature bus for transmitting said output signature to a diagnostic computer for comparison with a first expected logical character stored in said diagnostic computer when a signature analyzer control signal is a logical one and the output multiplexer for selecting the bypass bus for transmitting said plurality of buffer output words to said diagnostic computer for comparison with a second expected logical character stored in said diagnostic computer when said signature analyzer control signal is a logical zero, said first expected logical character having fewer binary words than said second expected logical character, said comparison with said first and said second expected logical characters for verifying the accuracy of said plurality of binary data and for isolating a failure to said circuit card under test.

4,608,692

ERROR CORRECTION CIRCUIT

Masahide Nagumo, Kawasaki; Tadashi Kojima, and Jun Inagawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Sep. 6, 1984, Ser. No. 647,919
Claims priority, application Japan, Sep. 6, 1983, 58-163675; Sep. 6, 1983, 58-163678
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—37 **2 Claims**



1. An error correction circuit for detecting and correcting a plurality of errors in codewords made up of k data and n−k inspection symbols in the playback data from a recorded medium each symbol made up of m binary bits of information using a Reed-Solomon code for error detection and correction so that the error location polynomial $\sigma(x)=x^e+\sigma_1 x^{-1}+\ldots+\sigma_e$ where e is the number of errors and the coefficients σ_1 to σ_e of the error location polynomial $\sigma(x)$ are related to the error syndromes S_i generated by the error correction circuit by the equation:

$$S_{i+e}+\sigma_1 S_{i+e-1}+\ldots\sigma_{e-1}S_{i+1}+\sigma_3 S_i=0$$

where the syndromes S_{i+e} to S_i are field elements α^i of the Galois field GF(2^m), the error correction circuit comprising:

means for generating syndromes S_0, S_1, S_2 and S_3 from the codewords;

means for effecting the following three calculations on the basis of the syndromes S_0, S_1, S_2 and S_3 generated by said syndrome generating means:

$$S_2S_0+S_1^2=r_3$$

$$S_3S_0+S_1S_2=r_2$$

$$S_3S_1+S_2^2=r_1$$

where r_3, r_2 and r_1 represent the values of the respective calculations;

means for judging whether the condition $r_3\neq 0$ or $r_3=0$;

a first processing means for finding error locations by determining the roots of the following equation as the error location polynomial, when the condition $r_3\neq 0$ is confirmed in said judging means:

$$r_3x^2+r_2x+r_1=0$$

where x represents the error locations; and

a second processing means for finding error location by determining the root of the following equation as the error location polynomial, when the condition $r_3=0$ is confirmed in said judging means under the condition of $r_2=0$:

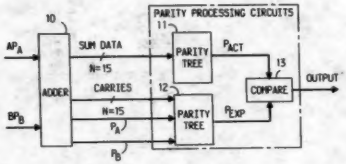
$$S_1+S_0x=0.$$

4,608,693

FAULT DETECTION ARRANGEMENT FOR A DIGITAL CONFERENCING SYSTEM

Lawrence Baranyai, Howell, and John R. Colton, Freehold, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 7, 1984, Ser. No. 607,829
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—49 **14 Claims**



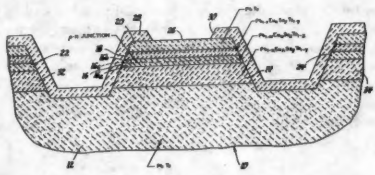
1. A signal processing system for a plurality of input data words, each of said plurality of input data words being accompanied by a parity check bit, comprising means for carrying out a binary arithmetic addition operation of said plurality of data words wherein carry bits are generated as a result of a modulo-2 addition of said plurality of data words, first parity means receiving the summed data output of the addition means and forming a first parity bit therefrom, second parity means receiving said generated carry bits of the addition operation and the parity bits of said input data words and serving to generate a second parity bit therefrom, and means for comparing said first and second parity bits to provide an error signal when said first and second parity bits differ.

4,608,694

LEAD-EUROPIUM SELENIDE-TELLURIDE HETEROJUNCTION SEMICONDUCTOR LASER

Dale L. Partin, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1983, Ser. No. 565,397
Int. Cl.[4] H01S *3/19*; H01L *33/00*
U.S. Cl. 372—44 **6 Claims**



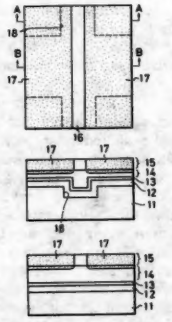
1. In a double heterojunction semiconductor lead salt infrared diode laser, the improvement wherein a semiconductive monocrystalline lead salt active region layer of given energy band gap, index of refraction, crystal structure and lattice constant is sandwiched between two semiconductive monocrystalline lead salt layers of mutually opposite conductivity type containing europium and selenium and having an energy band gap significantly higher than, an index of refraction significantly lower than, a crystal structure the same as, and a lattice constant substantially equal to said active region layer, effective to increase laser performance by providing lattice matching among said layers as well as providing at least carrier confinement with respect to said active region layer.

4,608,695

LASER DEVICE FORMED WITH A STRIPE LIGHT EMISSION REGION

Tatsuji Oda, Atsugi; Takayoshi Mamine, Kawasaki, and Osamu Yoneyama, Hiratsuka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,788
Claims priority, application Japan, Sep. 30, 1982, 57-172202
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—45 **1 Claim**



1. A semiconductor laser device having a resonant cavity and having a semiconductor substrate with a first electrode on its one major surface in which a first cladding layer, an active layer, a second cladding layer, a capping layer and a second electrode are formed on another major surface of said semiconductor substrate and a heterojunction is formed between said active layer and said first and second cladding layers respectively, comprising:

(a) a stripe emission region formed in said active layer;

(b) a concave or convex portion of said laser formed in said active layer at least on one light end of said light emission region for a range of approximately the width of said light emission region; and

(c) a flat portion formed on said active layer and having a portion inside of the end portion of said light emission region and having a width which is wider than that of said light emission region.

4,608,696

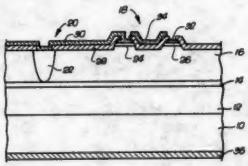
INTEGRATED LASER AND FIELD EFFECT TRANSISTOR

Hsiang-Yi D. Law, Agoura, and Edward A. Rezek, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 502,073, Jun. 8, 1983, abandoned. This application Jun. 22, 1983, Ser. No. 506,684

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—50 **22 Claims**



1. A monolithic laser and electronic device, comprising:

a substrate;

a semiconductor laser formed on said substrate; and

a metal-insulator-semiconductor field-effect transistor (MISFET) also formed on said substrate and having one electrical terminal in common with a terminal of said semiconductor laser; wherein

said substrate is of a Group III-V compound heavily doped with an impurity of a particular polarity type;

said device further includes a laser active layer of a Group III-V compound formed on said substrate, and a MISFET channel region of a Group III-V compound formed over said laser active layer and doped with an impurity of the opposite polarity of said substrate;

said semiconductor laser includes a diffused region formed in said MISFET channel region by selective diffusion of a material of the same polarity type as said laser active layer, and an ohmic contact region formed over said diffused region; and

said MISFET includes source and drain regions formed over said MISFET active layer, one of said source and drain regions being electrically connected to said ohmic contact region of said semiconductor laser, and an insulated gate terminal disposed between said source and drain regions; and wherein said MISFET is operated in an inversion mode; and wherein said semiconductor laser is disposed at least in part below the level of the MISFET, thereby facilitating the use of planar fabrication techniques.

4,608,697

SPECTRAL CONTROL ARRANGEMENT FOR COUPLED CAVITY LASER

Larry A. Coldren, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 483,513, Apr. 11, 1983, abandoned. This application Jun. 16, 1983, Ser. No. 504,829

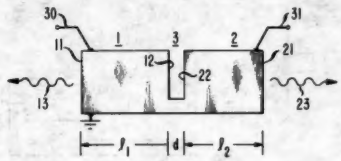
Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—50 **36 Claims**

1. A semiconductor device comprised of

a first heterostructure section including first and second mirror facets, a plurality of semiconductor layers capable of generating a light output signal in response to an applied electrical signal, and first electrode means connected to the heterostructure section for receiving electrical signals applied to the plurality of semiconductor layers, and

control means responsive to the light output signal, said control means being optically coupled to the first heterostructure section through the first mirror facet and connected to the first electrode means, for generating an optical control signal mutually and optically coupled with the first mirror facet of the first heterostructure section and for generating a first electrical control signal which is supplied to the first electrode means, so that the light output signal exhibits substantially a single longitudinal mode.



4,608,698

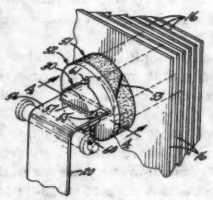
ELECTRIC HEAT TREATING FURNACE WITH QUICKLY SERVICEABLE HEATING ASSEMBLY COMPONENTS

Craig A. Moller, Loves Park, and Eric H. Wolter, Cherry Valley, both of Ill., assignors to Abar Ipsen Industries, Feasterville, Pa.

Filed Sep. 10, 1984, Ser. No. 648,493

Int. Cl.⁴ H05B *3/08*

U.S. Cl. 373—130 **9 Claims**

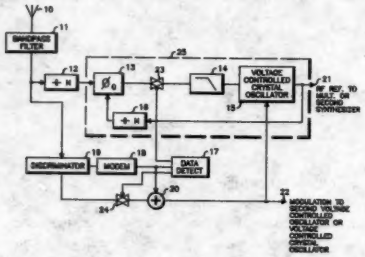


1. An electric heat treating furnace comprising wall means defining a work chamber, an electric resistance heating element disposed within said chamber and operable when energized to heat workpieces disposed in said chamber, means located outside of said chamber for energizing said heating element, and a rigid conductor extending slidably through said wall means and connecting said heating element electrically to said energizing means, said conductor having an inner end portion connected to an end of said heating element, the improvement in said furnace comprising, a retaining washer encircling the inner end portion of said conductor and located between the end of said heating element and said wall means, and an insulating washer encircling the inner end portion of said conductor and engaging said retaining washer, said retaining washer and said insulating washer each being formed with a substantially radially extending slit and each being movable into and out of encircling relationship with the inner end portion of said conductor from within said chamber without taking said conductor out of said wall means and without disconnecting said conductor from said heating element.

4,608,699
SIMULCAST TRANSMISSION SYSTEM

Percy P. Batlivala, Arlington Heights, and Christopher N. Kurby, Elmhurst, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,846
Int. Cl.⁴ H04L *27/10*
U.S. Cl. 375—5 **11 Claims**



1. An improved simulcast transmission system having a master transmitter and a plurality of phase-locked remote receiver and simulcast transmitter units wherein a transmitted carrier signal provides a reference signal for the simulcast transmitters used at the remote transmitter sites to distribute a simulcast signal, comprising:

means for receiving a carrier signal;

phase-locked loop means including a first electronic switch means for phase locking to the received carrier signal and providing a phase-locked reference signal to said remote simulcast transmitters, wherein said first electronic switch means opens the phase-locked loop in response to a signal;

discriminator means coupled to said receiving means for recovering a base-band signal of audio and encoded data;

modem means coupled to said discriminator means to recover the data signal from said modem means comprising the base-band signal;

data detector means coupled to said modem means and said first electronic switch means, to sense the presence of data, and activate or deactivate said first electronic switch;

a second electronic switch means coupled to said discriminator means and responsive to said data detector means to block the audio signal in the presence of data; and

summing network means coupled to said modem means and to said second electronic switch means for providing a modulation signal to the remote transmitters comprising the combined audio and data signals.

4,608,700
SERIAL MULTI-DROP DATA LINK

James L. Kirtley, Jr., Brookline, Mass., Thomas L. Sterling, Palm Bay, Fla., and Ronald D. Williams, Charlottesville, Va., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

PCT No. PCT/US81/00986, § 371 Date Jul. 29, 1982, § 102(e) Date Jul. 29, 1982
PCT Filed Jul. 23, 1981, Ser. No. 417,763
Int. Cl.⁴ H04B *3/00*
U.S. Cl. 375—36 **15 Claims**

1. An asychronous digital data link for establishing communications among a plurality of components associated with the link, the link comprising at least two serial paths, a data path used for communicating data and a control path used for transmission of link access request signals, and a plurality of ports, each port connected to an associated component and each port comprising:

(a) a data receiver connected to the data path and the associated component to receive data from the data path and convey such data to the associated component;

(b) a data transmitter connected to the data path and the associated component to convey data from the component and transmit the data to the data path when activated;

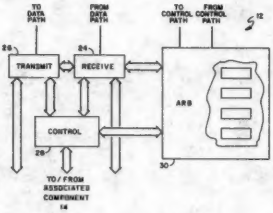
(c) means connected to the link for generating an end of function signal indicating the end of a data communication;

(d) means connected to the link for detecting an end of function signal;

(e) a control transmitter connected to the control path for generating access request signals of at least one priority class on request of the associated component;

(f) an arbitration unit connected to the control path consisting of

(i) at least one register means for maintaining the number of pending bus access requests, and



(ii) means for incrementing and decrementing said register means, in response to access request signals and end of function signals; and

(g) a control unit connected to the arbitration unit, data receiver, data transmitter, control transmitter and associated component, the unit comprising:

(i) enabling means connected to the register means of the arbitration unit for indicating to the associated component that, no other component has a pending request of higher priority and that, within its request signal class, no other component has an earlier request for bus access, and

(ii) conveying means responsive to the enabling means for conveying data from the component to the transmitter for transmission to the data path.

4,608,701
COMMUNICATION RECEIVING UNIT FOR THE SUPPRESSION OF NOISE AND INTERFERENCE SIGNALS

Bernhardus W. A. Burgers, Haaksbergen, and Adrianus Johannes P. T. Razenberg, Hengelo, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., GD Hengelo, Netherlands

Filed Sep. 19, 1984, Ser. No. 652,367
Claims priority, application Netherlands, Sep. 22, 1983, 8303253
Int. Cl.⁴ H04B *15/00*; H04K *1/00*
U.S. Cl. 375—1 **7 Claims**

1. An adaptive communication receiving unit suitable for the suppression of noise and jamming signals, said receiving unit comprising:

a plurality of antenna elements;

a network of adaptive weighting filters connected to said antenna elements;

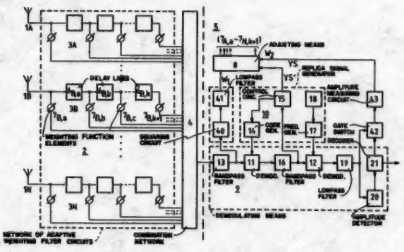
a combination circuit cnnected to said network;

a detector connected to the combination circuit and provided with means for generating a replica (d) of an information-supplying carrier signal present in a signal received by the antenna elements and with means for demodulating a signal (y) of the combination circuit to the

information-related frequency band on the basis of the replica (d); and

adjusting means for generating adjustment signals for the adaptive weighting filters,

characterised in that the detector comprises first means for determining, for the adjusting means, a value (W_1) proportional to a time average of the power concerning the signal (y) produced by the combination circuit and relating to at least a portion of a predefined transmitter frequency band; that the detector comprises second means for determining, for the



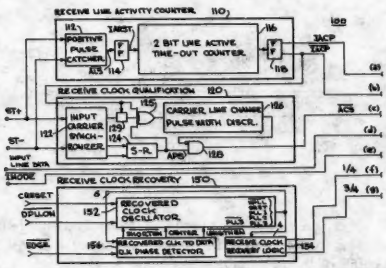
adjusting means, a value (W_2) proportional to a time average of the cross correlation concerning the signal (y) and the replica (d) and relating to at least a portion of the predefined transmitter frequency band; and that the adjusting means is designed for generating, upon the supply of adjusting signals to the weighting filters, modified adjusting signals on the basis of the time-averaged values (W_1 and W_2) resulting therefrom to adjust the weighting filters corresponding with an extreme value of a function $f(W_1,W_2)$ containing the two values W_1 and W_2.

4,608,702

METHOD FOR DIGITAL CLOCK RECOVERY FROM MANCHESTER-ENCODED SIGNALS

Frederic J. Hirzel, Cupertino, Calif., and Roy J. Levy, Ashland, Oreg., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 21, 1984, Ser. No. 684,919
Int. Cl.[4] H04L 7/02
U.S. Cl. 375—110 **3 Claims**



1. A method of recovering the clock from Manchester-encoded signals on a pair of signal lines said Manchester-encoded signals being a serial Manchester-encoded stream having an inter-bit period T, comprising the steps of:

a. generating a recovered-clock signal having a period of approximately T;

b. detecting "zero-crossing" when the signed voltage differential on said pair of signal lines becomes zero;

c. comparing the occurrence of the "zero-crossing" of the received signals with the occurrence of the "mid-point" T/2 of the period of the most-recently-generated recovered-clock signal;

d. generating a recovered-clock signal having a period shorter than, equal to, or greater than the period of the most-recently-generated recovered-clock signal depending on whether the comparison step (c) indicated the occurrence of said "zero-crossing" to be before, coincident with, or after, respectively, said "mid-point" T/2 occurrence of said most-recently-generated recovered-clock signal; and

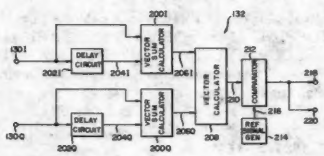
e. repeating steps (b), (c) and (d) on the next-received serial signal.

4,608,703

SYNCHRONIZATION DETECTION SYSTEM FOR DATA TRANSMISSION

Mitsuru Kaga, Hatano, and Shigetaka Tanaka, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 9, 1984, Ser. No. 608,625
Claims priority, application Japan, May 12, 1983, 58-81665; May 13, 1983, 58-82474; May 13, 1983, 58-82475; Jun. 6, 1983, 58-99448
Int. Cl.[4] H04L 7/04, 23/02
U.S. Cl. 375—114 **8 Claims**



1. A system for detecting synchronization in data transmission which, in a training sequence for receiving a two-dimensionally modulated signal by way of a demodulator, detects a point of transition from an alternating symbol sequence of two different symbol elements to a pseudorandom symbol sequence, said system comprising:

calculator means for calculating a vector sum of two signals in a signal space which are time-serially remote from each other by a period of two symbol elements;

comparator means for comparing said vector sum with a predetermined threshold value; and

detector means for detecting said point of transition in terms of a decrease of the vector sum beyond said threshold value.

4,608,704

METHOD AND APPARATUS FOR COUNTING SHEETS WHICH MAY BE FED IN SKEWED AND/OR OVERLAPPING FASHION

William Sherman, III, Medford; Francis C. Larkin, Trenton, both of N.J., and Stephen J. Horvath, Bensalem, Pa., assignors to Brandt, Incorporated, Watertown, Wis.

Filed Nov. 10, 1982, Ser. No. 440,584
Int. Cl.[4] G06M 7/06
U.S. Cl. 377—8 **8 Claims**

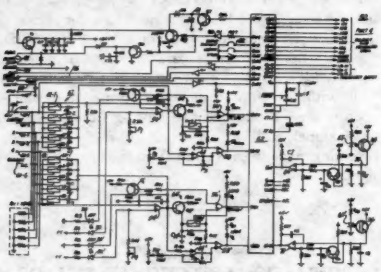
3. Apparatus for handling and counting sheets comprising:

means for receiving sheets from an input stack and delivering said sheets in single spaced-apart fashion towards an output location;

counting means for counting the sheets as they move towards the output locations;

means for displaying the count developed by said counting means responsive to a local display request;

means for coupling the display signal to a remote counting and display apparatus;



means responsive to a remote display request for blanking said display means and applying display signals to said coupling means.

4,608,705

INFORMATION RETRIEVAL APPARATUS CAPABLE OF STOPPING AN INFORMATION BEARING MEDIUM ACCURATELY AT A DESIRED LOCATION

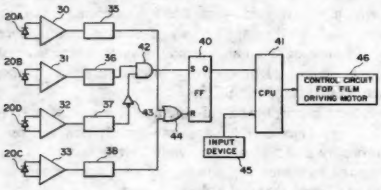
Kano Tanaka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1984, Ser. No. 583,836

Claims priority, application Japan, Mar. 1, 1983, 58-33971; Jan. 25, 1984, 59-11446

Int. Cl.[4] G06K 7/10

U.S. Cl. 377—18 8 Claims



1. Apparatus for retrieving desired information from an information bearing medium making use of marks provided thereon, comprising:

means for feeding said information bearing medium;

at least three detection means for detecting the marks on said information bearing medium, said at least three mark-detecting means being arranged at determined intervals in the direction in which said information bearing medium is fed;

memory means which assumes a first state when a mark on said information bearing medium is detected by the first mark-detecting means lying on the most-upstream side or by the second mark detecting means lying on the most-downstream side as viewed in the feeding direction of said information bearing medium and which assumes a second state when the mark is detected by the third mark detecting means lying between said first and second mark-detecting means;

means for counting output signals generated when said memory means assumes said second state; and

control means for controlling said feeding means in accordance with the counter content of said counting means.

4,608,706

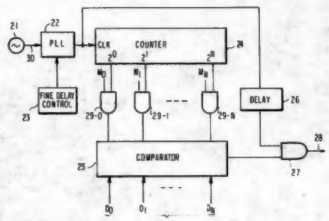
HIGH-SPEED PROGRAMMABLE TIMING GENERATOR

Yihua E. Chang, Poughkeepsie; Lawrence J. Grasso, Pleasant Valley; Algirdas J. Gruodis, and Carroll E. Morgan, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,856

Int. Cl.[4] H03K 27/00

U.S. Cl. 377—39 6 Claims



1. A programmable timing generator comprising;

means for producing a continuously cycling count;

means for comparing said count with a phase control digital word; and

means for selectively inhibiting a predetermined and variable number of the higher ordered bits of said comparing means such that only those bits of said count and said digital word below a predetermined bit position corresponding to said number are compared.

4,608,707

ROTATING ANODE X-RAY TUBE PROVIDED WITH A CHARGE FLOW DEVICE

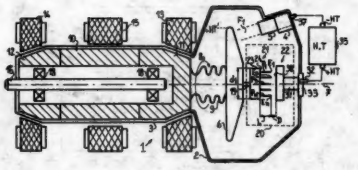
Emile Gabbay, Paris, and André Plessis, Clamart, both of France, assignors to Thomson-CGR, Paris, France

Filed Jun. 22, 1984, Ser. No. 623,714

Claims priority, application France, Jul. 6, 1983, 83 11260

Int. Cl.[4] H01J 35/04

U.S. Cl. 378—132 10 Claims

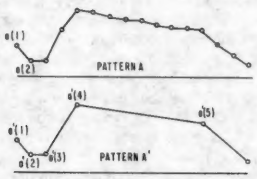


1. A rotating anode X-ray tube provided with a charge flow device mass for generating the anode current of the tube, the latter being of the type having magnetic bearings, said device means being provided with an electron emitter electrically connected to a rotating anode and an electron collector electrically connected to a high voltage positive pole of the tube, wherein the emitter, coupled in rotation to the rotating anode, comprises at least one part having a tapered end, constituting an electron emissive zone where electrons are emitted said electrons being trapped by the collector, said collector being maintained in a fixed position, said device means establishing the anode current between the emitter and the collector without material contact between the latter and without requiring heating of the emitter.

4,608,708
PATTERN MATCHING SYSTEM

Takao Watanabe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,490
Claims priority, application Japan, Dec. 24, 1981, 56-215666; Dec. 24, 1981, 56-215667
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 381—43 **2 Claims**



1. A pattern matching system for comparing two patterns A and B, said system comprising:

first memory means (1) for storing a series of representative vectors {a(1), - - - , a(k), - - - a(k)} and a series of extraction points {P(1), - - - , P(k), - - - , P(k)}, said series {a(1), - - - , a(k), - - - a(k)} indicating connecting points of a compressed pattern which is obtained by approximating said pattern A in a piecewise straight line approximation, said series {P(1), - - - , P(k), - - - , P(k)} indicating said connecting points;

second memory means (2) for storing the second pattern B {b(1), . . . , b(l), . . . b(L)} expressed as a series of feature vectors;

distance calculating means (3) for calculating a distance d(l,k) between a segment connecting representative vectors a(k) and a(k−1) and the feature vector b(l) in accordance with a control address (l,k);

weighting coefficient calculating means (4) for calculating a weighting coefficient depending on a distance $\Delta P(k)=P(k)-P(k-1)$;

weighted distance calculating means (5) for calculating a weighted distance defined by said distance d(l, k) and said weighting coefficient; and

matching means (6) for calculating a composite distance between said patterns A and B by considering said weighted distance through shifting said control address signal (l, k) from k=1, . . . , K to l=1 . . . , L, said composite distance being a measure of similarity between patterns A and B.

4,608,709
METHOD AND APPARATUS FOR GAUGING CONTAINERS

Robert C. Hedler, Toledo, Ohio; Robert D. Kohler, Temperance, Mich., and John H. Dunlap, Wickliffe, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 473,285, Mar. 8, 1983, abandoned. This application Sep. 4, 1985, Ser. No. 773,087
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—1 **28 Claims**

1. Apparatus for inspecting the finish of a container comprising:

means for rotating a container;

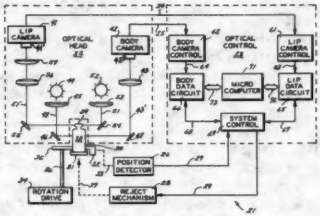
means for illuminating the finish of said container as it rotates to provide an image containing the shadow of said finish;

means for scanning said image as the container rotates to provide a first series of measurements of outer diameter of said finish;

means for averaging each said measurement in said first series with at least one preceding measurement in said first series to obtain a second series of average outer diameter measurements;

first comparing means for comparing each said average outer diameter measurement in said second series with preceding average outer diameter measurements in said second series to identify a minimum outer diameter measurement;

second comparing means for comparing each said average



outer diameter measurement with preceding average diameter measurements in said second series to identify a maximum outer diameter measurement;

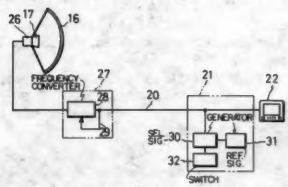
means for comparing each of said minimum and maximum outer diameter measurements with associated preselected minimum and maximum values; and

means for providing a signal when one of said minimum and maximum outer diameter measurements is not between its associated preselected minimum and maximum values.

4,608,710
APPARATUS FOR RECEIVING SATELLITE BROADCASTS

Toshihiro Sugiura, Aichi, Japan, assignor to Masprodenkoh Kabushikikaisha, Japan

Continuation of Ser. No. 509,101, Jun. 29, 1983, abandoned. This application May 3, 1985, Ser. No. 729,900
Claims priority, application Japan, Jul. 15, 1982, 57-123491
Int. Cl.⁴ H04B *1/26*; H04H *1/02*
U.S. Cl. 455—4 **5 Claims**



1. An apparatus for receiving sattelite broadcasts comprising

a station selector for indoor use which is provided with an input terminal for connection thereto to one end of a transmission line and an output terminal for connection thereto of a television receiver and is adapted to deliver a selected intermediate-frequency signal, which is delivered to said input terminal thereof from said one end of the transmission line, to said television receiver, and

a frequency-conversion device for outdoor use which is provided with an input terminal for connection thereto to a receiving antenna and an output terminal for connection thereto to the other end of said transmission line and is adapted to transform selected one of those broadcast signals in multiple channels which are supplied to said input terminal thereof by said antenna into said selected intermediate-frequency signal and to deliver the same to said transmission line from said output terminal thereof,

said station selector including:

(a) a reference-signal generator for production of a frequency-stabilized reference signal;

(b) a selection-signal generator adapted to receive said reference signal, to form a station-selecting signal of a frequency equal to a multiple of the frequency of said reference signal and further to deliver said station-selecting signal to said transmission line from said input terminal of said station selector; and

(c) a selector switch operably connected to said selection-signal generator for choosing said multiple; and said frequency-conversion device including:

(d) a first oscillator for generating a frequency-conversion signal of a frequency controlled by an input thereto;

(e) a frequency divider adapted to receive said frequency-conversion signal and to produce a signal of a frequency equal to a submultiple of the frequency of said frequency-conversion signal;

(f) a first phase comparator adapted to compare the phase of a first input thereof supplied by said frequency divider with the phase of said station-selecting signal applied as a second input thereof, to produce a control output dependent on the difference between the input phases of said first phase comparator and further to apply said control output as said input of said first oscillator;

(g) a mixer adapted to mix the broadcast signals in multiple channels delivered by said antenna as a first input thereof through said input terminal of said frequency-conversion device with said frequency-conversion signal supplied by said first oscillator as a second input thereof, thereby producing intermediate-frequency signals; and

(h) a band-pass filter adapted to pass only one of said intermediate-frequency signals that has a prescribed intermediate frequency and to deliver said one intermediate-frequency signal as said selected intermediate-frequency signal; and

(i) said control output of said first phase comparator controlling the output frequency of said first oscillator so that any difference between said submultiple of said output frequency of said first oscillator and said station-selecting signal is compensated for.

4,608,711

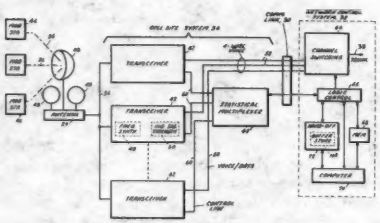
CELLULAR MOBILE RADIO HAND-OFF UTILIZING VOICE CHANNEL

Stuart O. Goldman, Columbus, Ohio, assignor to ITT Corporation, New York, N.Y.

Filed Jun. 21, 1984, Ser. No. 622,941

Int. Cl.[4] H04Q *7/04*; H04B *7/00*

U.S. Cl. 455—33 **6 Claims**



1. In a cellular mobile communication system wherein mobile stations having transceivers can communicate with each other, the system being arranged in a set of cells wherein each cell has a cell station for communication with individual ones of said mobile stations, there being a set of communication channels assigned to each of said cells, each of said channels being available for use in carrying a communication of one of said mobile stations, the set of channels assigned to one of said cells differing from the set of channels assigned to a second of said cells contiguous said one cell, the cell station in each of said cells having receivers each tuned to respective ones of the channels assigned to the cell for receiving signals of the mobile stations within the cell, a cluster of said cells having a network control system through which said cell stations communicate with each other, said network control system operating in conjunction with hand-off apparatus for handing off a mobile station from a first of said cells to a second of said cells as the mobile station travels from the first cell to the second cell, said hand-off apparatus being responsive to the strength or quality of signals of a mobile station monitored in a group of cells contiguous said first cell; the improvement wherein

each of said cell-station receivers comprises means for tuning the receiver to a channel of a contiguous cell, thereby providing an idle channel to monitor the signal of a mobile station in a contiguous cell; and wherein said hand-off apparatus comprises:

means for activating the tuning means in one of said receivers in each of a plurality of said cells for reception of a channel assigned to another of said cells, thereby to provide measurement signals indicating the signal strength or quality of a mobile station in said another cell;

means for storing the measurement signal of a group of cells contiguous said another cell;

means coupled to the storing means for comparing the measurement signals and for selecting the best of the measurement signals; and

means for designating the cell associated with the best measurement signal to receive a hand-off of the transceiver.

4,608,712

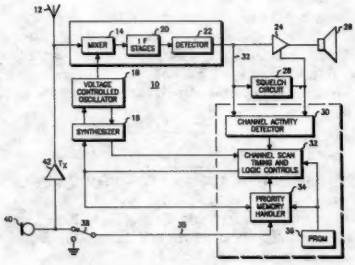
SPONTANEOUS CHANNEL CONTINUITY SCANNING RADIO

Chris S. Fedde, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 571,040, Mar. 2, 1984, abandoned, which is a continuation of Ser. No. 356,876, Mar. 10, 1982, Pat. No. 4,484,357. This application May 9, 1985, Ser. No. 732,906

Int. Cl.[4] H03J *7/18*

U.S. Cl. 455—166 **5 Claims**



1. A method for modifying a channel scan sequence in response to generation of a control signal in a scanning radio for receiving signals on a number of channels and having scanning circuitry for monitoring individual ones of the predetermined channels including priority channel monitoring circuitry, wherein data respresenting at least one channel is stored and designated as a priority channel, comprising the steps of:

displacing, in response to generation of the control signal, said stored data identifying at least one channel designated as a priority channel;

assigning, for a temporary period, a channel monitored by the scanning circuitry, to a priority designation in response to generation of the control signal; and

automatically restoring the displaced data after the temporary period expires.

4,608,713

FREQUENCY CONVERTER

Yasufumi Shiomi, Suita, and Yoshikazu Yoshimura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

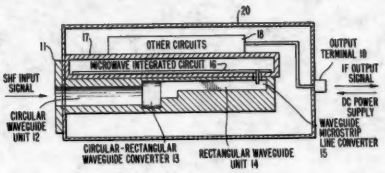
PCT No. PCT/JP84/00004, § 371 Date Aug. 29, 1984, § 102(e) Date Aug. 29, 1984, PCT Pub. No. WO84/03008, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 13, 1984, Ser. No. 642,350

Claims priority, application Japan, Jan. 20, 1983, 58-8429; Feb. 18, 1983, 58-26532

Int. Cl.[4] H04B *1/26*

U.S. Cl. 455—325 **4 Claims**



1. A frequency converter comprising:

an unobstructed circular waveguide unit through one end of which received signals are fed thereto and conveying signals in the TE11 mode at an output end;

a rectangular waveguide unit having a rectangular waveguide-microstrip line converter unit in its output end and conveying signals in the TE10 mode;

a circular-rectangular waveguide converter unit connecting the output end of said circular waveguide unit and an input end of said rectangular waveguide unit to convert the mode of transmission of signals from the TE11 mode in the circular waveguide unit to a principal transmission mode TE10 in the rectangular waveguide unit; and

a microwave integrated circuit extending in the direction of and on the H-wall side of said circular-rectangular waveguide converter unit and said rectangular waveguide unit and connected to said rectangular waveguide-microstrip line converter unit for processing the received signals and delivering the received signals as signals of an intermediate frequency;

said circular waveguide unit having a diameter to provide a cutoff frequency of said circular waveguide unit to be lower than the frequency of the received signals and higher than a local oscillation frequency for causing said circular waveguide unit to function as a high pass filter, and the axis of said rectangular waveguide unit being offset relative to that of said circular waveguide unit in the direction parallel to the shorter side of said rectangular waveguide unit and toward the H-wall along which said microwave integrated circuit is positioned.

4,608,714

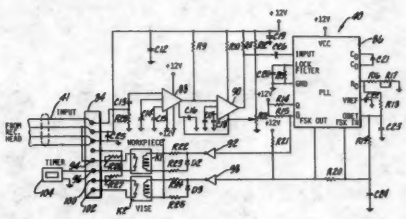
LOW BATTERY DETECTOR FOR A MACHINE SYSTEM USING INFRARED TELEMETRY

Richard O. Juengel, Romeo, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Division of Ser. No. 414,734, Sep. 3, 1982, Pat. No. 4,545,106, which is a continuation-in-part of Ser. No. 259,257, Apr. 30, 1981, Pat. No. 4,401,945. This application May 1, 1985, Ser. No. 729,418

Int. Cl.[4] H04B *9/00*

U.S. Cl. 455—603 **7 Claims**



1. A data communication system for a machine system comprising:

a transmitter having a battery for selectively supplying power to electrical components adapted to transmit a plurality of different infrared signals each associated with a given event related to operations on a workpiece;

remote receiver means for detecting the presence of any of the infrared signals transmitted from the transmitter; and

timer means coupled to said receiver means and energized by the detected presence of any of the received infrared signals, operative to display to the user an indication of battery usage in the transmitter.

DESIGN PATENTS

GRANTED AUG. 26, 1986

ERRATA

For CLASS	See PATENT NO.
D05–063	285,379

DESIGNS

AUGUST 26, 1986

285,260

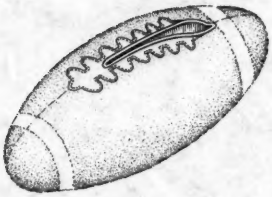
SLIPPER

Brooke G. Keith, West Trenton, N.J., assignor to Commonwealth Toy & Novelty Co., Inc., New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,128

Term of patent 14 years

U.S. Cl. D2—279



285,261

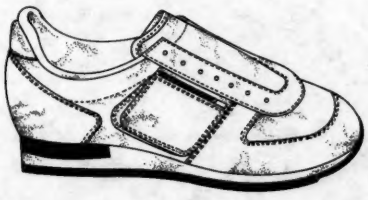
PURSE POCKETED SHOE

Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.

Filed May 26, 1983, Ser. No. 498,492

Term of patent 14 years

U.S. Cl. D2—309



285,262

TOOTHBRUSH ASSEMBLY

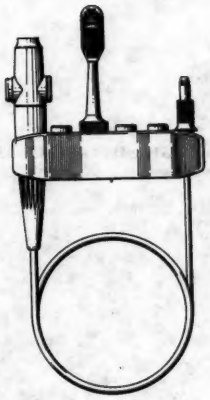
Ronald Herzfeld, Germering, Fed. Rep. of Germany, assignor to Thorwarth & Grebe OHG, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,872

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 13843; Apr. 24, 1984, 14003

Term of patent 14 years

U.S. Cl. D4—101



285,263

HANDLE FOR TOOTHBRUSH OR FLOSSING AID

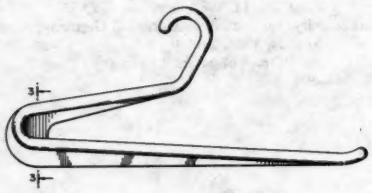
Percy H. Hill, Silver Lake, N.H., assignor to Stratford Laboratories, Englewood Cliffs, N.J.

Filed Mar. 5, 1984, Ser. No. 586,044

Term of patent 14 years

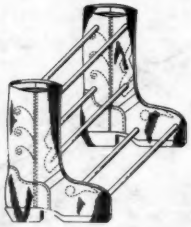
U.S. Cl. D4—104

285,264
HANGER
Peter R. Miale, 3 Mindy Ct., Locust Valley, N.Y. 11560
Filed Apr. 30, 1984, Ser. No. 605,305
Term of patent 14 years
U.S. Cl. D6—327

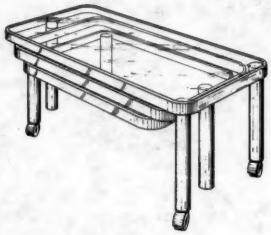


285,265
DISPLAY STAND FOR FLOWERS
Rene J. T. M. Pas, Kapellenberglaan 44, Rozendaal (Gld.), Netherlands
Filed Apr. 20, 1984, Ser. No. 602,658
Term of patent 14 years
U.S. Cl. D6—405

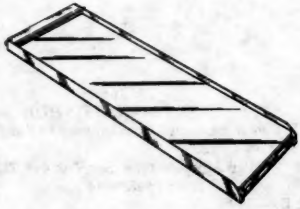
285,266
SHOE RACK
Robert L. Bowsher, 212 - 19th Ave., Moline, Ill. 61265
Filed Feb. 21, 1984, Ser. No. 582,001
Term of patent 14 years
U.S. Cl. D6—412

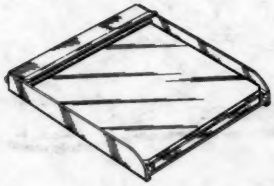


285,267
TABLE
Richard D. Berry, Jr., Hickory, N.C., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Jul. 11, 1983, Ser. No. 512,336
The portion of the term of this patent subsequent to Jun. 24, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—430

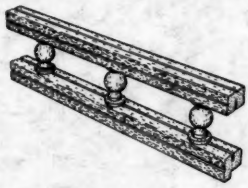


285,268
DISPLAY CASE
William J. Scheid, 179 Birkdale Rd., Scarborough, Ontario, Canada (M1P 3R9), and Brian G. Nugent, 47 Braemar Dr., Bramalea, Ontario, Canada L6T 2L5
Filed Aug. 2, 1983, Ser. No. 519,722
Term of patent 14 years
U.S. Cl. D6—470



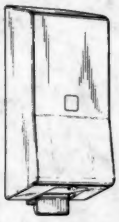


285,269
FURNITURE RAIL OR SIMILAR ARTICLE
Carroll W. Cope, Marion, Va., assignor to DG Shelter Products, Marion, Va.
Filed Feb. 14, 1984, Ser. No. 580,005
Term of patent 14 years
U.S. Cl. D6—491

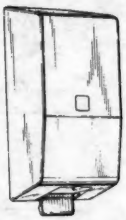


285,270
UNIVERSAL KEYBOARD MOUNT
Bruce R. Hannah, Cold Spring, N.Y.; William I. Stephens, East Greenville, Pa.; George Wilmot, New Canaan, Conn., and Eric J. Armstrong, Pennsburg, Pa., assignors to Knoll International, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 494,808, May 16, 1983. This application Jan. 30, 1984, Ser. No. 574,908
Term of patent 14 years
U.S. Cl. D6—511

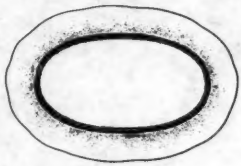
285,271
LIQUID SOAP DISPENSER
Gerrit K. Bunschoten, Oud Zuilen; Gerardus J. van der Vlies, Heusden, and Joost van Berne, Dongen, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.
Filed Aug. 17, 1984, Ser. No. 641,661
Claims priority, application United Kingdom, Feb. 21, 1984, 841018023
Term of patent 14 years
U.S. Cl. D6—545

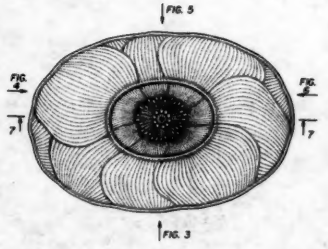


285,272
LIQUID SOAP DISPENSER
Gerrit K. Bunschoten, Oud Zuilen; Gerardus J. van der Vlies, Heusden, and Joost van Berne, Dongen, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.
Filed Aug. 17, 1984, Ser. No. 641,662
Claims priority, application United Kingdom, Feb. 21, 1984, 841018022
Term of patent 14 years
U.S. Cl. D6—545

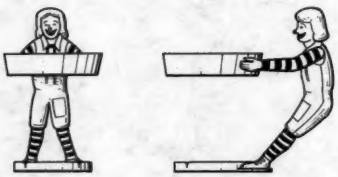


285,273
GRAVY BOAT STAND
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,797
Term of patent 14 years
U.S. Cl. D7—1

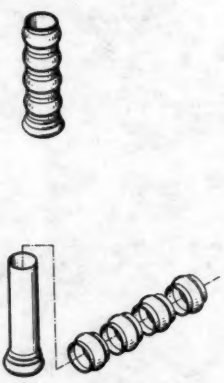




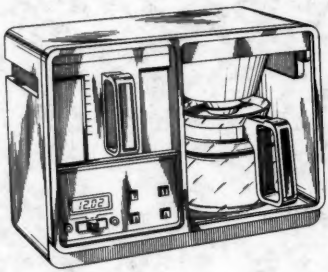
285,274
CUP HOLDER
Robert A. DeMars, 7932 Maestro Ave., Canoga Park, Calif. 91304
Filed Jan. 30, 1984, Ser. No. 574,740
Term of patent 14 years
U.S. Cl. D7—70



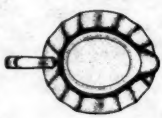
285,275
COMBINED NAPKIN RINGS AND HOLDER SET
Hilda S. Pollitz, Redondo Beach, Calif., assignor to Teleflora, Inc., Los Angeles, Calif.
Filed Sep. 23, 1983, Ser. No. 535,266
Term of patent 14 years
U.S. Cl. D7—72



285,276
DRIP COFFEEMAKER OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to Black & Decker, Inc., Del.
Filed Aug. 29, 1983, Ser. No. 527,035
Term of patent 14 years
U.S. Cl. D7—309



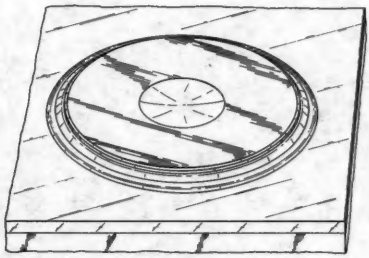
285,277
CREAM PITCHER
Toschio Murai, Tajimi, Japan, assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 28, 1983, Ser. No. 518,086
Term of patent 14 years
U.S. Cl. D7—319



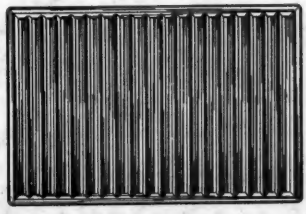
285,278
INSULATED JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed Jan. 25, 1984, Ser. No. 573,646
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1983, MR 200
Term of patent 14 years
U.S. Cl. D7—321

285,279
BARBECUE
Alfred A. Arevalo, and Mario M. Arevalo, both of 233 Westminster, San Antonio, Tex. 78228
Filed Jul. 9, 1984, Ser. No. 629,091
Term of patent 14 years
U.S. Cl. D7—334

285,280
COMBINED ELECTRIC HOTPLATE AND MOUNTING SURFACE THEREFOR
Karl Fischer, and Felix Schreder, both of Oberderdingen, Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany
Filed May 27, 1983, Ser. No. 498,652
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, MR II/122BR
Term of patent 14 years
U.S. Cl. D7—346

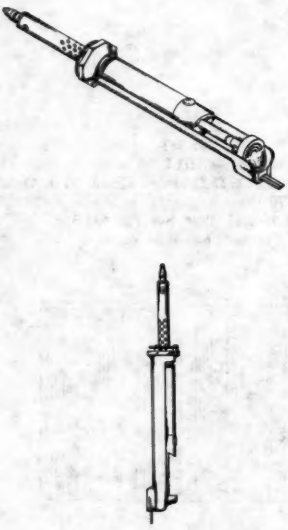


285,281
GRILL
Donald E. Sable, II, 12322 Greenlea Chase West, Oklahoma City, Okla. 73170
Filed Jun. 15, 1984, Ser. No. 621,365
Term of patent 14 years
U.S. Cl. D7—363



285,282
FOG APPLICATOR FOR PESTICIDE AND HERBICIDE CHEMICAL DISPERSION
Dan Ariaz, 7575 Tamra Dr., Reno, Nev. 89506, and Vance Robison, P.O. Box 2315, Sparks, Nev. 89432
Filed Jan. 24, 1983, Ser. No. 460,440
Term of patent 14 years
U.S. Cl. D8—2

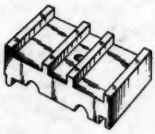
285,283
MULTI-PURPOSE SOLDERING GUN
Tsan-Hsiung Cheng, No. 3, La. 31, Nan Lin St., Tainan City, Taiwan (700)
Filed Jul. 18, 1983, Ser. No. 514,628
Claims priority, application Taiwan, Feb. 1, 1983, 7230481
Term of patent 14 years
U.S. Cl. D8—30

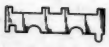


285,284
HAMMER
Stefan Blomqvist, Sunne, Sweden, assignor to Sunnex Equipment AB, Sunne, Sweden
Filed Jan. 24, 1983, Ser. No. 460,392
Claims priority, application Sweden, Jul. 26, 1982, 82-1888
Term of patent 14 years
U.S. Cl. D8—77

285,285
GLASS CUTTER
Hiroshi Soyama, Ibaragi, Japan, assignor to Mitsuboshi Diamond Kogyo Kabushiki Kaisha, Settsu, Japan
Filed Nov. 14, 1983, Ser. No. 551,740
Term of patent 14 years
U.S. Cl. D8—98

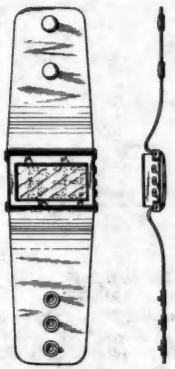
285,286
CABLE MOUNTING BLOCK
Stephen N. Sharpe, Hightstown Borough, Mercer County, N.J., assignor to The Idea Works, Inc., Pequannock, N.J.
Filed Feb. 27, 1984, Ser. No. 583,594
Term of patent 14 years
U.S. Cl. D8—356



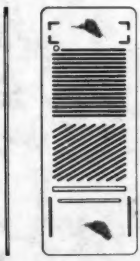


285,287
BREAD BAG CLIP
Stanley E. Tannar, 4933 Cliff Dr., Delta, British Columbia, Canada V4M 2C2
Filed Jul. 22, 1983, Ser. No. 516,097
Term of patent 14 years
U.S. Cl. D9—434

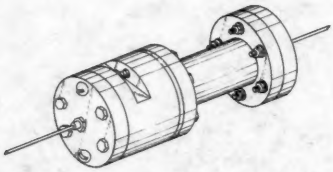
285,288
WRIST WATCH
Jacky Chau, Hong Kong, Hong Kong, assignor to Big Time Inc., West Hempstead, N.Y.
Filed Jul. 1, 1985, Ser. No. 750,918
Term of patent 14 years
U.S. Cl. D10—32



285,289
TEMPLATE FOR LINING, SHADING AND THE LIKE
Sheldon G. Wimmer, 77 N. 200 East, and Keith O. Sandbloom, 16 S. 100 West, both of Alpine, Utah 84043
Filed Aug. 1, 1983, Ser. No. 519,004
Term of patent 14 years
U.S. Cl. D10—64



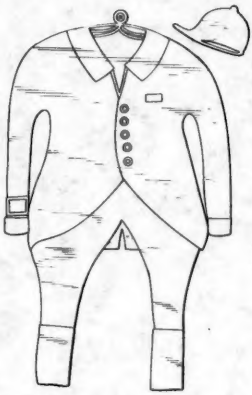
285,290
MODULAR PREPARATIVE HIGH PRESSURE LIQUID CHROMATOGRAPHY COLUMN
Yehuda Shalon; Tadmor Shalon, and Danny D. Meyer, all of St. Louis County, Mo., assignors to Hp Chemicals, Inc., St. Louis, Mo.
Filed May 9, 1983, Ser. No. 492,802
Term of patent 14 years
U.S. Cl. D10—81

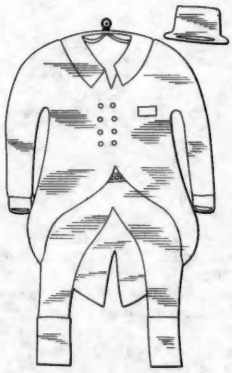


285,291
RING
Nicholas Brescia, Yonkers, N.Y., assignor to Master Sales/-Management Corp., Yonkers, N.Y.
Filed Apr. 20, 1984, Ser. No. 602,351
Term of patent 14 years
U.S. Cl. D11—34

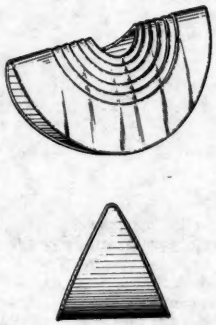
285,292
RING
Gianni Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy
Filed May 23, 1984, Ser. No. 613,369
Claims priority, application Italy, Dec. 9, 1983, 36320/83[U]
Term of patent 14 years
U.S. Cl. D11—37

285,293
HANGING ORNAMENT
Brigitte Breyer-Lindner, Habichtstr. 34, D-8025 Unterhaching, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 268,010, May 28, 1981, abandoned. This application Aug. 18, 1983, Ser. No. 525,251
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 11 AR 5012/80
Term of patent 14 years
U.S. Cl. D11—125





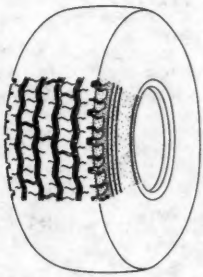
285,294
VASE
Ambrogio Pozzi, Gallarate, Italy, assignor to Rosenthal Akt. Rechtsabteilung, Fed. Rep. of Germany
Filed Aug. 23, 1984, Ser. No. 643,662
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 7368
Term of patent 14 years
U.S. Cl. D11—143



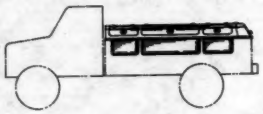
285,295
BICYCLE HANDLEBAR STEM
John S. Kirkpatrick, Brooklyn, N.Y., assignor to Ross Bicycles Inc., Rockaway Beach, N.Y.
Filed Nov. 25, 1985, Ser. No. 806,201
Term of patent 14 years
U.S. Cl. D12—118

285,296
BICYCLE TIRE TREAD
Susumu Kazusa; Harunori Okamoto, and Eiji Fukuchi, all of Kagawa, Japan, assignors to Mistuboshi Belting Ltd., Kobe, Japan
Filed Mar. 20, 1984, Ser. No. 591,431
Claims priority, application Japan, Sep. 20, 1983, 58-41211; Fed. Rep. of Germany, Apr. 24, 1984, 14003
Term of patent 14 years
U.S. Cl. D12—136

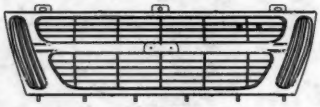
285,297
TIRE
Miroslav Manestar, and Richard J. Skerl, both of Barberton, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Mar. 30, 1984, Ser. No. 595,018
Term of patent 14 years
U.S. Cl. D12—146



285,298
TRUCK COVER OR SIMILAR ARTICLE
Billy C. Fly, Phoenix, Ariz., assignor to Eke Chapin, Phoenix, Ariz.
Filed Feb. 7, 1984, Ser. No. 577,806
Term of patent 14 years
U.S. Cl. D12—156

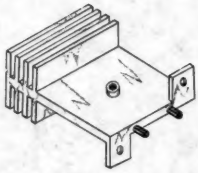


285,299
FRONT RADIATOR GRILLE FOR AN AUTOMOBILE
Geoffrey P. Wardle, Coundon Coventry, England, and Björn E. A. Envall, Vänersborg, Sweden, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Feb. 7, 1984, Ser. No. 577,743
Claims priority, application Sweden, Aug. 8, 1983, 83-2019
Term of patent 14 years
U.S. Cl. D12—163



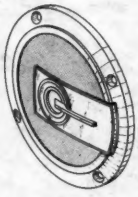
285,300
THERMALLY-EFFICIENT HEAT SINK FOR ELECTRONIC DEVICES
Kenneth R. St.Jacques, Gilford, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Feb. 13, 1984, Ser. No. 579,280
Term of patent 14 years
U.S. Cl. D13—23

285,301
PINNED HEAT-SINK EXTRUSION FOR CIRCUIT-BOARD MOUNTING
Philip A. Johnson, Exeter, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Apr. 23, 1984, Ser. No. 602,666
Term of patent 14 years
U.S. Cl. D13—23

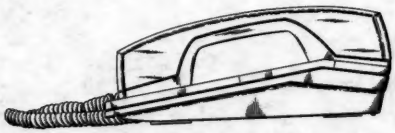


285,302
LEADLESS INTEGRATED-CIRCUIT CHIP-CARRIER HEAT SINK
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Oct. 24, 1984, Ser. No. 664,253
Term of patent 14 years
U.S. Cl. D13—23

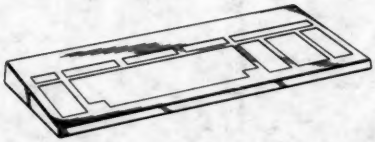
285,303
LOUDSPEAKER PANEL
Petrus H. J. van de Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 15, 1983, Ser. No. 561,762
Claims priority, application United Kingdom, Jun. 29, 1983, 1.013.834
Term of patent 14 years
U.S. Cl. D14—39



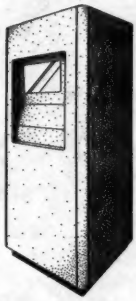
285,304
KEY TELEPHONE SET
Hiroshi Inaba, Kawasaki, Japan, assignor to Nitsuko Limited, Kawasaki, Japan
Filed Jan. 26, 1983, Ser. No. 461,102
Claims priority, application Japan, Jul. 28, 1982, 57-33788
Term of patent 14 years
U.S. Cl. D14—58



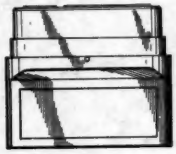
285,305
KEYBOARD HOUSING
James G. Liuzzo, St. Charles; William J. Proetta, Elburn, both of Ill.; Gordon E. Sylvester, Jamaica, N.Y., and Alvin R. Tilley, Redbank, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 4, 1984, Ser. No. 606,947
Term of patent 14 years
U.S. Cl. D14—100



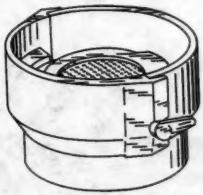
285,306
PUBLIC ACCESS DATA PROCESSOR CONTROLLED INFORMATION TERMINAL
Richard M. Joffe, Palisades Park; Oskar Loosme, Lincroft, both of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Information Systems Inc., Morristown, N.J.
Filed Aug. 15, 1985, Ser. No. 765,637
Term of patent 14 years
U.S. Cl. D14—102



285,307
COMPUTER PROGRAM CARTRIDGE
Roger W. Clarke, Ottery St. Mary, England, assignor to Sinclair Research Limited, Cambridge, England
Filed Mar. 26, 1984, Ser. No. 593,514
Claims priority, application United Kingdom, Sep. 27, 1983, 1015346
Term of patent 14 years
U.S. Cl. D14—114

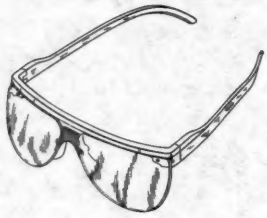


285,308
CATALYTIC CONVERTER
Peter S. Albertsen, Warwick, R.I., assignor to Nu-Tec Incorporated, East Greenwich, R.I.
Filed Apr. 1, 1983, Ser. No. 481,340
Term of patent 14 years
U.S. Cl. D15—5

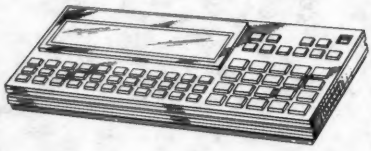


285,309
LENS FOR EYE GLASSES
Irving Rips, P.O. Box 77932, Los Angeles, Calif. 90007
Filed Sep. 1, 1983, Ser. No. 528,626
Term of patent 14 years
U.S. Cl. D16—101

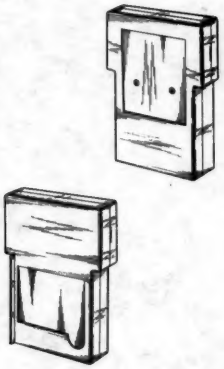
285,310
PAIR OF SPECTACLES
Daniel Rocha, Lowell, Mass., assignor to Foster Grant Corporation, Leominster, Mass.
Filed May 18, 1984, Ser. No. 611,065
Term of patent 14 years
U.S. Cl. D16—116



285,311
ELECTRONIC CALCULATOR
Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Sep. 28, 1984, Ser. No. 655,889
Claims priority, application Japan, Mar. 29, 1984, 59-12856
Term of patent 14 years
U.S. Cl. D18—7



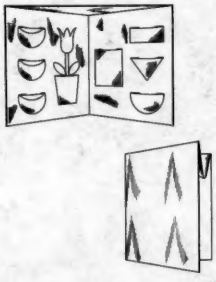
285,312
CARTRIDGE FOR A TYPEWRITER
Jack H. Jennings, and Peter J. Mendel, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 29, 1984, Ser. No. 676,348
Term of patent 14 years
U.S. Cl. D18—12



285,313
BOOK SPINE
Michael E. Maune, St. Louis, Mo., assignor to Enduro Binders, Inc., Syracuse, N.Y.
Filed Apr. 11, 1983, Ser. No. 483,643
Term of patent 14 years
U.S. Cl. D19—32

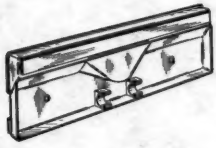
285,314
ARTICULATED BALL POINT PEN
Agrippino Galoppo, Grugliasco, Italy, assignor to Paim s.n.c. di Casole Patrizia & C., Grugliasco, Italy
Filed Mar. 20, 1984, Ser. No. 591,390
Claims priority, application Italy, Oct. 21, 1983, 53844/83[U]
Term of patent 14 years
U.S. Cl. D19—42

285,315
EDUCATIONAL STORAGE UNIT FOR A CHILD OR THE LIKE
Barbara Kosi, 5201 Carriageway Dr., Rolling Meadows, Ill. 60008, and Pamela Gertig, 1882 Jamestown Cir., Hoffman Estates, Ill. 60195
Filed Sep. 26, 1983, Ser. No. 535,649
Term of patent 14 years
U.S. Cl. D19—59

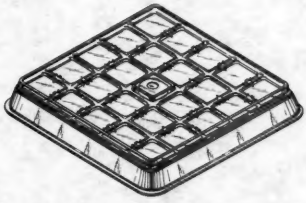


285,316
PEN HOLDER BASE
Richard F. Mahoney, 809 Pleasant St., and Kenneth L. Swartz, 149 Judson St., both of Raynham, Mass. 02767
Filed Mar. 30, 1984, Ser. No. 595,546
Term of patent 14 years
U.S. Cl. D19—99

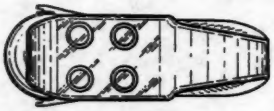
285,317
SET OF HANGER MOUNTING PIECES FOR ATTACHMENT TO A DISPLAY BOARD OR SIMILAR ARTICLE
Houston F. James, 8350 Moberly La., Dallas, Tex. 75227
Filed Oct. 31, 1983, Ser. No. 547,042
Term of patent 14 years
U.S. Cl. D20—43



285,318
GAME BOARD OR SIMILAR ARTICLE
George F. Propson, Racine, Wis., assignor to Western Publishing Company, Inc., Racine, Wis.
Filed Feb. 16, 1984, Ser. No. 581,003
Term of patent 14 years
U.S. Cl. D21—17

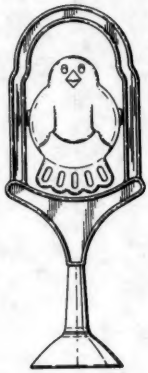


285,319
RATTLE
Jacob Nielsen, Copenhagen, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Dec. 15, 1983, Ser. No. 561,736
Term of patent 14 years
U.S. Cl. D21—65



285,320
RATTLE
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Feb. 1, 1984, Ser. No. 575,852
Claims priority, application United Kingdom, Nov. 9, 1983, 1016176
Term of patent 14 years
U.S. Cl. D21—65

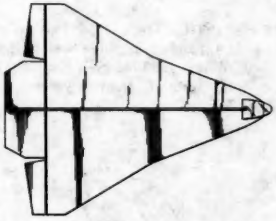
285,321
SUCTION TOY
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Dec. 26, 1984, Ser. No. 686,294
Claims priority, application United Kingdom, Sep. 3, 1984, 1021845
Term of patent 14 years
U.S. Cl. D21—65



285,322
TOY WAGON
Mel Appel, Livingston, N.J., assignor to The Mel Appel Company, Short Hills, N.J.
Filed Nov. 2, 1983, Ser. No. 548,202
Term of patent 14 years
U.S. Cl. D21—71

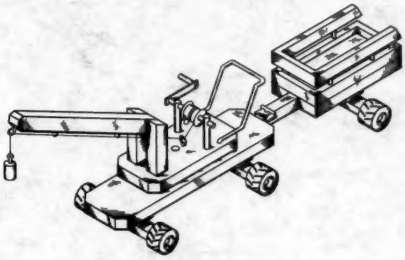
285,323
TOY GOLF CART
Mel Appel, Livingston, N.J., assignor to The Mel Appel Company, Short Hills, N.J.
Filed Dec. 12, 1983, Ser. No. 560,398
Term of patent 14 years
U.S. Cl. D21—80

285,324
TOY GLIDER
Thomas G. Barker, Wakefield, Mass., assignor to Paul K. Guillow, Inc., Wakefield, Mass.
Filed Mar. 12, 1984, Ser. No. 588,248
Term of patent 14 years
U.S. Cl. D21—89



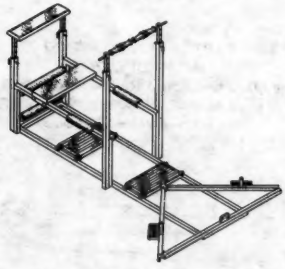
285,325
TOY CONSTRUCTION PIECE SIMULATING A SLIDE
Ib H. Berggreen, Vedbaek, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 30, 1984, Ser. No. 676,672
Term of patent 14 years
U.S. Cl. D21—108

285,326
COMBINED CRANE AND TRAILER TOY
Gary E. Clark, Sikeston, Mo., assignor to G. Weber Gilmore, Sikeston and Richard G. Heywood, Kirkwood, both of, Mo., part interest to each
Filed Apr. 2, 1984, Ser. No. 596,039
Term of patent 14 years
U.S. Cl. D21—132

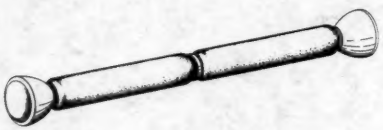


285,327
TOY GUN
Hiroshi Yano, Moriguchi, Japan, assignor to Sekiden Kaihatsu Shoji Kabushiki Kaisha, Moriguchi, Japan
Filed Jul. 9, 1984, Ser. No. 629,075
Claims priority, application Japan, Jan. 7, 1984, 59-125
Term of patent 14 years
U.S. Cl. D21—147

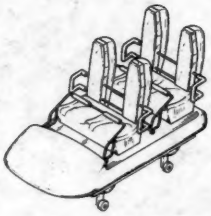
285,328
FRAME FOR PHYSICAL EXERCISER
David L. Cardiff, Sr., P.O. Box 2554, Arnold, Calif. 95223
Filed May 29, 1984, Ser. No. 614,983
Term of patent 14 years
U.S. Cl. D21—191



285,329
HAND GRIP EXERCISER
Walter W. Boettger, Jr., P.O. Box 257, Chester Heights, Pa. 19017
Filed Apr. 12, 1984, Ser. No. 599,489
Term of patent 14 years
U.S. Cl. D21—198

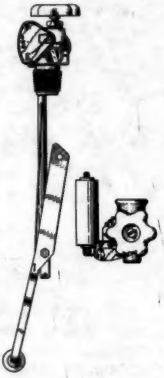


285,330
VEHICLE FOR A ROLLER COASTER
Masaaki Okamoto, Osaka, Japan, assignor to Meisho Tokushu Sangyo Co., Ltd., Osaka, Japan
Filed Dec. 29, 1983, Ser. No. 566,690
Term of patent 14 years
U.S. Cl. D21—242

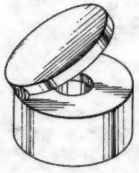


285,331
REVOLVER BARREL WITH INTEGRATED RECOIL REDUCER
Vito Cellini, 3115 Old Ranch Rd., San Antonio, Tex. 78217
Filed May 21, 1984, Ser. No. 612,397
Term of patent 14 years
U.S. Cl. D22—108

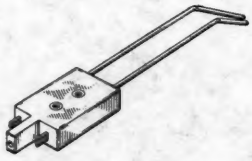
285,332
GAUGE VALVE
Joseph C. Trinkwalder, North Tonawanda, N.Y., assignor to Sherwood Selpac Corp., Lockport, N.Y.
Filed Nov. 21, 1983, Ser. No. 553,987
Term of patent 14 years
U.S. Cl. D23—21



285,333
FIRE EXTINGUISHER DISCHARGE NOZZLE
William A. Enk, 1213 Horizon, Blue Springs, Mo. 64015
Filed Jun. 15, 1983, Ser. No. 504,620
Term of patent 14 years
U.S. Cl. D23—34



285,334
GAS FLAME IGNITER
Robert H. Johnson, 517 N. Bush, Anaheim, Calif. 92802
Filed Dec. 27, 1983, Ser. No. 565,877
Term of patent 14 years
U.S. Cl. D23—90.1



285,335

OILSTOVE

Nobuyuki Kojima; Youichi Sekigawa, both of Kamo, and Makoto Kobiyama, Niigata, all of Japan, assignors to Toshiba Heating Appliances Co., Ltd., Kamo, Japan

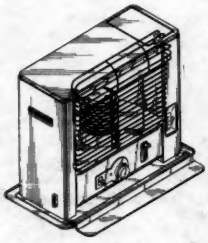
Filed Dec. 1, 1983, Ser. No. 557,110

Claims priority, application Japan, Sep. 8, 1983, 58-38904; Sep. 8, 1983, 58-38905

The portion of the term of this patent subsequent to May 6, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D23—122



285,336

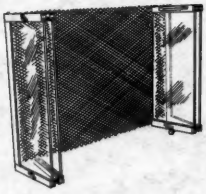
PICTURE WINDOW FIREPLACE SCREEN

Carl J. Demrick, Birmingham, Mich., and Ronald D. Hussey, Brampton, Canada, assignors to Shepherd Products Limited, Markham, Canada

Filed Feb. 10, 1983, Ser. No. 465,644

Term of patent 14 years

U.S. Cl. D23—138.3



285,337

DENTAL BLAST CABINET

Lawrence S. Klaas, Brookfield, Wis., assignor to Ruemelin Manufacturing Co., Milwaukee, Wis.

Filed May 7, 1984, Ser. No. 607,442

Term of patent 14 years

U.S. Cl. D24—4

285,338

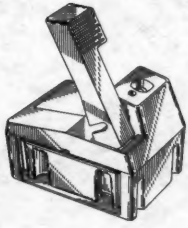
NEEDLE AND SYRINGE DESTRUCTOR

Michael J. Szablak, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.

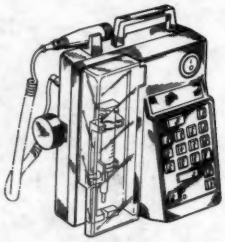
Filed Oct. 24, 1983, Ser. No. 544,623

Term of patent 14 years

U.S. Cl. D24—8



285,339
PROGRAMMABLE INFUSION AND INJECTION UNIT OR THE LIKE
Anders Tamsen, Sveddvägen 5B, S-752 52 Uppsala, Sweden
Filed Mar. 8, 1983, Ser. No. 472,885
Claims priority, application Sweden, Sep. 10, 1982, 82-2171
Term of patent 14 years
U.S. Cl. D24—17



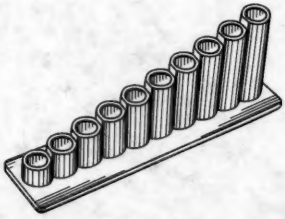
285,340
MILKFAT TESTER OR THE LIKE
Donald T. Nevin, Kingwood, Tex., assignor to Forcoven Products, Inc., Kingwood, Tex.
Filed Nov. 28, 1983, Ser. No. 555,540
Term of patent 14 years
U.S. Cl. D24—17

285,341
TONGUE CLEANER
Clifford J. Audette, 74 Highland St., Worcester, Mass. 01609
Filed Nov. 29, 1984, Ser. No. 647,222
Term of patent 14 years
U.S. Cl. D24—23

285,342
TONGUE CLEANER
Clifford J. Audette, 74 Highland St., Worcester, Mass. 01609
Filed Nov. 29, 1984, Ser. No. 647,224
Term of patent 14 years
U.S. Cl. D24—23

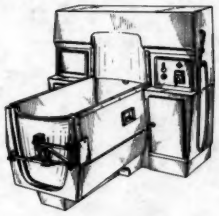
285,343
BONEPLUG DRILL BIT
Herminio Duarte-Martins, Jr., Sundsvall, Sweden, assignor to Ulla Anette Duarte-Martins, Sundsvall, Sweden
Filed Jul. 29, 1983, Ser. No. 518,368
Term of patent 14 years
U.S. Cl. D24—28

285,344
DOSAGE DEVICE FOR SYRINGES
James B. Olson, Torsdagsvägen 40, S-863 00 Sundsbruk, Sweden
Filed Jun. 30, 1983, Ser. No. 509,298
Claims priority, application Sweden, Jan. 10, 1983, 83-0053
Term of patent 14 years
U.S. Cl. D24—31

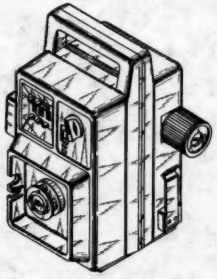


285,345
INTRAOCULAR LENS WITH TEARDROP SHAPED RESILIENT SUPPORT MEANS
Dennis D. Shepard, 1414 E. Main St., Santa Maria, Calif. 93454
Filed Apr. 12, 1982, Ser. No. 367,295
The portion of the term of this patent subsequent to Aug. 19, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—33

285,346
BATHING TUB
Adrian P. Sween, Rte. 3, Box 214B, Little Falls, Minn. 56345
Filed Nov. 17, 1983, Ser. No. 552,673
Term of patent 14 years
U.S. Cl. D24—38

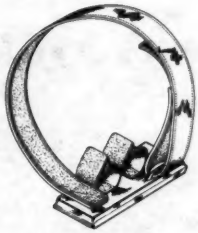


285,347
ROTARY PERISTALTIC PUMP FOR INTRAVENOUS DELIVERY OF MEDICAL SOLUTIONS TO PATIENTS
Denis H. Nelson, Poway, and Gary W. Kozlow, Solana Beach, both of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Sep. 28, 1983, Ser. No. 536,587
Term of patent 14 years
U.S. Cl. D24—51



285,348
URINAL
Gerald L. Matthews, 6104 Barr Ave., Orlando, Fla. 32809
Filed May 21, 1984, Ser. No. 612,634
Term of patent 14 years
U.S. Cl. D24—54

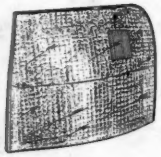
285,349
PEDIATRIC LUMBAR PUNCTURE IMMOBILIZER
William R. Nesbitt, 6967 Blue Oak La., Loomis, Calif. 95650
Filed Jan. 16, 1984, Ser. No. 571,031
Term of patent 14 years
U.S. Cl. D24—64



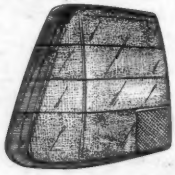
285,350
SWIMMING POOL
George P. Sullivan, Seattle, Wash., assignor to San Juan Pools, Inc., Hemet, Calif.
Filed May 26, 1981, Ser. No. 266,960
The portion of the term of this patent subsequent to Jul. 26, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—2

285,351
LAMP-REFLECTOR MODULE FOR USE IN A MOTOR VEHICLE HEADLIGHTING SYSTEM
George J. English, Reading, and Robert E. Levin, So. Hamilton, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Apr. 10, 1984, Ser. No. 598,605
Term of patent 14 years
U.S. Cl. D26—28

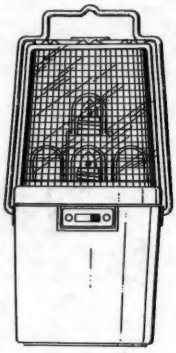
285,352
SIGNAL LIGHT FOR AN AUTOMOBILE
Björn E. A. Envall, Vänersborg, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,953
Claims priority, application Sweden, Oct. 26, 1983, 83-2772
Term of patent 14 years
U.S. Cl. D26—35



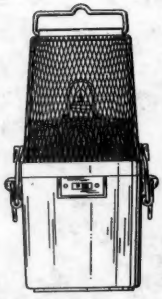
285,353
REAR LIGHT FOR AN AUTOMOBILE
Björn E. A. Envall, Vänersborg, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,954
Claims priority, application Sweden, Oct. 26, 1983, 83-2772
Term of patent 14 years
U.S. Cl. D26—35



285,354
TRANSISTORIZED MULTI-PURPOSE PORTABLE LAMP
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 11, 1983, Ser. No. 483,534
Claims priority, application United Kingdom, Oct. 11, 1982, 1 009 180
Term of patent 14 years
U.S. Cl. D26—41

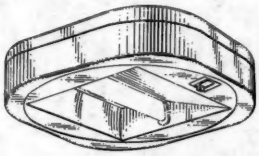


285,355
TRANSISTORIZED MULTI-PURPOSE PORTABLE LAMP
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 18, 1983, Ser. No. 495,770
Claims priority, application United Kingdom, Nov. 22, 1982, 1 009 834
Term of patent 14 years
U.S. Cl. D26—41

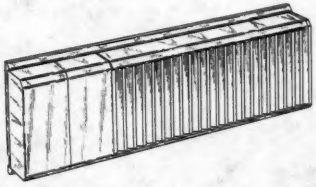


285,356
FLASHLIGHT
John F. Schosser, New Fairfield; Roger F. Gleason, Stratford, both of Conn.; Charles M. Dole, Purdys, N.Y.; Max Us, Bridgeport, Conn.; John D. Howard, Brewster, N.Y., and Peter D. Spaine, Stratford, Conn., assignors to Duracell Inc., Bethel, Conn.
Filed Feb. 8, 1983, Ser. No. 464,822
Term of patent 14 years
U.S. Cl. D26—49

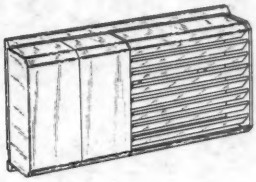
285,357
TASK LIGHTING FIXTURE
John C. Pritchett, 4777 Enders Rd., Manlius, N.Y. 13104
Filed Nov. 22, 1983, Ser. No. 554,352
Term of patent 14 years
U.S. Cl. D26—61



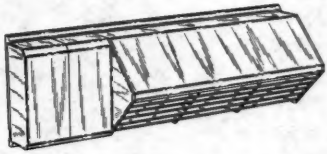
285,358
LIGHTING FIXTURE
Stefanus F. W. Joosten, and Evert Oosterheerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 13, 1984, Ser. No. 579,736
Claims priority, application Benelux, Aug. 25, 1983, 58173-02
The portion of the term of this patent subsequent to Aug. 26, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—77



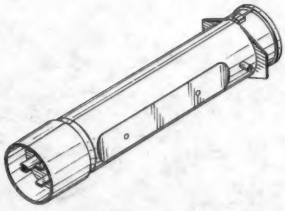
285,359
LIGHTING FIXTURE
Stefanus F. W. Joosten, and Evert Oosterheerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 13, 1984, Ser. No. 579,829
Claims priority, application Benelux, Aug. 25, 1983, 58173-01
The portion of the term of this patent subsequent to Aug. 26, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—77



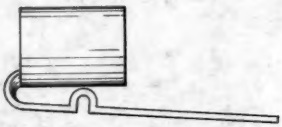
285,360
LIGHTING FIXTURE
Stefanus F. W. Joosten, and Evert Oosterheerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 13, 1984, Ser. No. 579,637
Claims priority, application Benelux, Aug. 25, 1983, 58173-03
Term of patent 14 years
U.S. Cl. D26—85



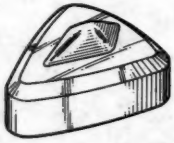
285,361
TROUBLE LIGHT HANDLE ATTACHMENT
Albert Marcucci, 1493 Kenmuir Ave., Mississauga, Ontario, Canada L5G 4B6
Filed Oct. 3, 1983, Ser. No. 538,675
Claims priority, application Canada, Jul. 11, 1983, 11-07-83-1
Term of patent 14 years
U.S. Cl. D26—138



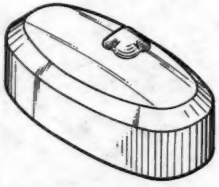
285,362
CIGARETTE HOLDER
Frank L. Boone, 3248 Banning Rd., and David Henlein, 3675 Hubble Rd., both of Cincinnati, Ohio 45239
Filed Jun. 4, 1984, Ser. No. 617,130
Term of patent 14 years
U.S. Cl. D27—2



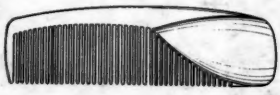
285,363
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Dec. 28, 1984, Ser. No. 687,226
Term of patent 14 years
U.S. Cl. D28—2



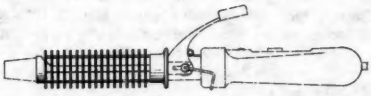
285,364
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Dec. 28, 1984, Ser. No. 687,321
Term of patent 14 years
U.S. Cl. D28—2



285,365
COMBINED COMB AND SHOEHORN
Albert J. DeFlorio, 3704 Lake Oakland Shores, Drayton Plains, Mich. 48020
Filed Jun. 29, 1984, Ser. No. 626,035
Term of patent 14 years
U.S. Cl. D28—25



285,366
HAIR CURLING IRON ATTACHMENT OR SIMILAR ARTICLE
Gerald J. Rubin, 6827 Market St., El Paso, Tex. 79915
Filed Feb. 28, 1984, Ser. No. 584,338
Term of patent 14 years
U.S. Cl. D28—35



285,367

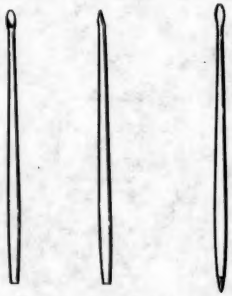
COMBINED COSMETIC APPLICATOR AND CLEANUP TOOL

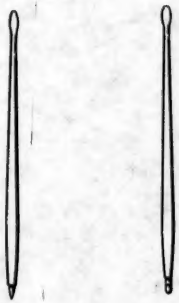
Millie C. Lindner, 700 A Rosewood Ct., Pittsburgh, Pa. 15236

Filed Aug. 23, 1984, Ser. No. 643,627

Term of patent 14 years

U.S. Cl. D28—57





285,368

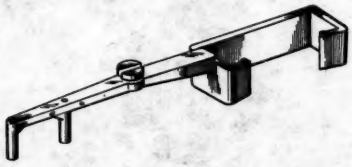
DENTAL FLOSSING TOOL

Marius J. Morin, Westlake Village, and Jack C. Munro, Thousand Oaks, both of Calif., assignors to Associated Medical Systems, Inc., Agoura Hills, Calif.

Filed Oct. 28, 1983, Ser. No. 546,322

Term of patent 14 years

U.S. Cl. D28—64



285,369

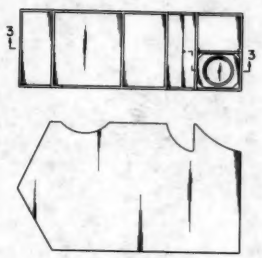
STORAGE DEVICE FOR A HAIR DRYER AND RELATED ARTICLES

Howard Sussman, 3101 NW. 25th Ave., Pompano Beach, Fla. 33060

Filed Aug. 20, 1984, Ser. No. 642,395

Term of patent 14 years

U.S. Cl. D28—73



285,370

BOX FOR COSMETIC PRODUCTS OR THE LIKE

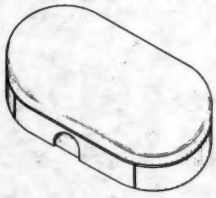
Alain Chevassus, Sceaux, France, assignor to Lefebure Isolants Reunis, Rungis, France

Filed Nov. 22, 1983, Ser. No. 554,226

Claims priority, application Hague, May 24, 1983, DM/002528

Term of patent 14 years

U.S. Cl. D28—76



285,371

COSMETIC CONTAINER WITH LIGHTED MIRROR

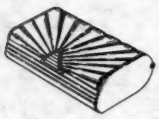
Wing K. Tong, Kowloon, Hong Kong, assignor to Mou Ki Industrial Limited, Kowloon, Hong Kong

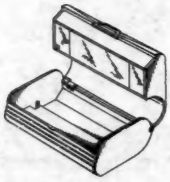
Filed Aug. 9, 1984, Ser. No. 639,110

Claims priority, application United Kingdom, Jun. 18, 1984, 1020359

Term of patent 14 years

U.S. Cl. D28—78





285,372

BLUSH COMPACT

Theodore Simonetti, New York, N.Y., and Elaine P. Spakowski, Little Falls, N.J., assignors to L'Oreal, France

Filed Sep. 24, 1984, Ser. No. 653,937

Term of patent 14 years

U.S. Cl. D28—83

285,373

PRESSED POWDER COMPACT

Theodore Simonetti, New York, N.Y., and Elaine P. Spakowski, Little Falls, N.J., assignors to L'Oreal, S.A., France

Filed Nov. 1, 1984, Ser. No. 667,214

Term of patent 14 years

U.S. Cl. D28—83

285,374

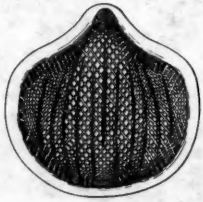
FACE MASK

Otto L. Huber, Beverly Hills, and Mark Magidson, Los Angeles, both of Calif., assignors to Moldex/Metric Products, Inc., Culver City, Calif.

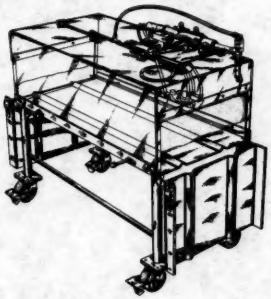
Filed Nov. 21, 1983, Ser. No. 553,492

Term of patent 14 years

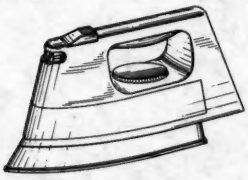
U.S. Cl. D29—8



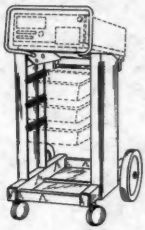
285,375
POULTRY VACCINATION UNIT
James L. Hutchins, Old Bridge, N.J., assignor to Schering Corporation, Kenilworth, N.J.
Continuation of Ser. No. 537,146, Sep. 29, 1983. This application Dec. 20, 1983, Ser. No. 563,431
Term of patent 14 years
U.S. Cl. D30—99



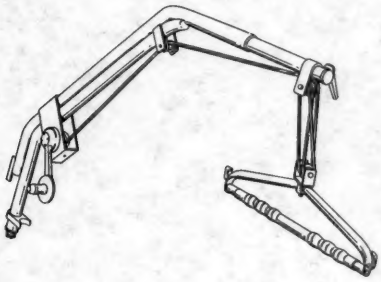
285,376
STEAM IRON
Franz A. Stutzer, and Michael Knochner, both of Offenbach am Main, Fed. Rep. of Germany, assignors to Rowenta-Werke, GmbH, Fed. Rep. of Germany
Filed Aug. 2, 1984, Ser. No. 636,973
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1984, 5 MR 10507
Term of patent 14 years
U.S. Cl. D32—70



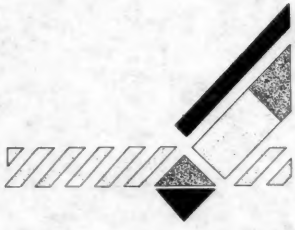
285,377
CART
Howard M. C. Tanner, Salt Lake City, Utah, assignor to HGM, Inc., Salt Lake City, Utah
Filed Mar. 31, 1983, Ser. No. 480,732
Term of patent 14 years
U.S. Cl. D34—21



285,378
HOIST FOR USE WITH A HOSPITAL BED
Margareta E. B. Norell, Huddinge, Sweden, assignor to Landstingens Inkopscentral, LIC, Ekonomisk Forening, Solna, Sweden
Filed Dec. 21, 1983, Ser. No. 564,468
Term of patent 14 years
U.S. Cl. D34—33



285,379
FABRIC PATTERN
Dietrich Metzger, Coburg, Fed. Rep. of Germany, assignor to adidas Sportschuhfabriken Adi Dassler Stiftung & Co. KG, Herzogenaurach, Fed. Rep. of Germany
Filed Sep. 21, 1984, Ser. No. 652,967
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, MR 8062
Term of patent 14 years
U.S. Cl. D5—63



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF AUGUST, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. W. Virta & Associates, Inc.: *See—*
Virta, Arthur W.; and Ullman, Fred E., 4,608,038, Cl. 493-29.000.

Aalto, William R.; and Sertic, James L., to Baxter Travenol Laboratories, Inc. Reconstitution device. 4,607,671, Cl. 141-329.000.

Abar Ipsen Industries: *See—*
Moller, Craig A.; and Wolter, Eric H., 4,608,698, Cl. 373-130.000.

Abbey, Kirk J., to SCM Corporation. Linear addition polyester copolymers. 4,608,423, Cl. 526-172.000.

Abbey, Kirk J.: *See—*
Craun, Gary P.; and Abbey, Kirk J., 4,608,139, Cl. 204-181.700.

Abbott Laboratories: *See—*
Larkin, Mark E., 4,608,043, Cl. 604-87.000.
Summers, James B., Jr., 4,608,390, Cl. 514-575.000.

Abe, Masahiro, to Glory Kogyo Kabushiki Kaisha. Endless belt separator having an unsupported separating surface. 4,607,832, Cl. 271-10.000.

Abe, Masanori: *See—*
Gomi, Manabu; and Abe, Masanori, 4,608,142, Cl. 204-192.00M.

Abrevaya, Hayim; and Imai, Tamotsu, to UOP Inc. Dehydrogenation catalyst compositions and method of preparing same. 4,608,360, Cl. 502-226.000.

Achilles Corporation: *See—*
Harada, Kunihiko, 4,607,439, Cl. 36-45.000.

Acker, Rolf-Dieter; Karl, Rudolf; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Brefeldin A derivatives and their use for controlling undesirable plant growth. 4,608,078, Cl. 71-88.000.

Ackeret, Peter, to IDN Inventions & Development of Novelties AG. Device for storing gramophone and video discs. 4,607,894, Cl. 312-15.000.

Adachi, Eiichi, to Ricoh Company, Ltd. Data compression device for picture processing apparatus. 4,608,607, Cl. 358-260.000.

Adachi, Hideo: *See—*
Hasegawa, Takahito; and Adachi, Hideo, 4,608,366, Cl. 514-58.000.

Adams, Charles. Accurate positioning apparatus. 4,607,461, Cl. 51-165.800.

Adams, Neil R., to Advanced Micro Devices, Inc. Controllable effective resistance and phase lock loop with controllable filter. 4,608,543, Cl. 331-8.000.

Adec, Inc.: *See—*
Allgood, Marvin D., 4,608,560, Cl. 340-825.520.

Adek Corporation: *See—*
Kamigaichi, Hideyuki; Kurachi, Kazuto; Asano, Nobuyoshi; and Hanada, Tatsuo, 4,607,925, Cl. 354-63.000.

Adir, S.A.R.L.: *See—*
Wierzbicki, Michel; and Bure, Jacques, 4,608,384, Cl. 514-413.000.

Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., to AMP Incorporated. Cable severing station. 4,607,554, Cl. 83-277.000.

Advanced Micro Devices, Inc.: *See—*
Adams, Neil R., 4,608,543, Cl. 331-8.000.
Hirzel, Frederic J.; and Levy, Roy J., 4,608,702, Cl. 375-110.000.
Threewitt, N. Bruce, 4,608,678, Cl. 365-189.000.
Wong, Thomas H.; and Chu, John W., 4,608,503, Cl. 307-270.000.

Advanced Technology Laboratories: *See—*
Powers, Jeffry E., 4,607,642, Cl. 128-663.000.

Aeritalia Societa Aerospaziale Italiana p.A.: *See—*
Turci, Edmondo; and Fubini, Guido, 4,607,815, Cl. 244-161.000.

Afros S.p.A.: *See—*
Fiorentini, Carlo, 4,608,233, Cl. 422-133.000.

Ageechkin, Mikhail M.: *See—*
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Agency of Industrial Science and Technology: *See—*
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

Ahlers, Klaas: *See—*
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,608,416, Cl. 525-130.000.

Aihara, Yoshihiko, to Canon Kabushiki Kaisha. Exposure control circuit for a camera having a load circuit. 4,607,931, Cl. 354-400.000.

Ainsworth Nominees Pty. Ltd.: *See—*
Fullerton, Graeme D., 4,607,844, Cl. 273-143.00R.

Aisin Seiki Co., Ltd.: *See—*
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,607,456, Cl. 49-352.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Kanoh, Junichi; and Aoki, Kongoh, 4,607,604, Cl. 123-572.000.
Kazaoka, Kenichi; and Okazaki, Hiroshi, 4,607,827, Cl. 267-107.000.
Okuyama, Teiji; and Noutomi, Hiroshi, 4,608,637, Cl. 364-424.000.
Yogo, Kenji; Nakamura, Mamoru; and Nishio, Shigeru, 4,608,208, Cl. 261-39.00R.

Aisin Seiki Kabushikikaisha: *See—*
Umebayashi, Kazuyuki; and Suzumura, Nobuyasu, 4,608,550, Cl. 340-22.000.

Aisin-Warner Kabushiki Kaisha: *See—*
Miura, Masakatsu; and Inuzuka, Takeshi, 4,607,541, Cl. 74-758.000.

Akahira, Rokuro: *See—*
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.

Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, to Fuji Oil Company, Ltd. Process for producing soybean protein powder using a fluidized bed. 4,608,203, Cl. 530-378.000.

Akiyama, Shigeru: *See—*
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

Akopian, Elena L.: *See—*
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Viliary B., 4,607,796, Cl. 241-3.000.

Akopova, Svetlana Z.: *See—*
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Aktiebolaget IRO: *See—*
Jacobsson, Kurt A. G., 4,607,506, Cl. 66-125.00R.
Jacobsson, Kurt A. G., 4,607,507, Cl. 66-132.00T.
Tholander, Lars H. G., 4,607,668, Cl. 139-452.000.

Aktiengesellschaft Adolph Saurer: *See—*
Zwiener, Rudolf; Mathis, Ernst; Thalmann, Theo; and Rohrich, Siegfried, 4,607,666, Cl. 139-115.000.

Albrecht, Konrad: *See—*
Greiner, Ulrich; Keil, Karl-Heinz; Heinrich, Rudolf; and Albrecht, Konrad, 4,608,277, Cl. 427-213.300.

Aldrich, Donald F., to Deraspan Corporation. Production of foam core insulating panels. 4,608,103, Cl. 156-64.000.

Alger, Stanton W., to 3D Video Corporation. Process for manufacturing 3-D glasses. 4,608,105, Cl. 156-108.000.

Alivizatos, Margaret A. Infant support pads. 4,607,403, Cl. 5-449.000.

Allegheny Ludlum Steel Corporation: *See—*
Malagari, Frank A., Jr., 4,608,100, Cl. 148-111.000.

Aller-Screen, Inc.: *See—*
Brennan, Cynthia B.; and Brennan, Louis G., 4,607,632, Cl. 128-743.000.

Allgood, Marvin D., to Adec, Inc. Computer controlled energy monitoring system. 4,608,560, Cl. 340-825.520.

Alliages Frittes Metafram: *See—*
Eudier, Michel; and Youssef, Hassan, 4,608,085, Cl. 75-247.000.

Allied Corporation: *See—*
Bachenheimer, Bernard O.; Antoci, Frank J.; Carver, Edward L., Jr.; Pellegrino, Ernest N.; and Seltenreich, Richard C., 4,607,526, Cl. 73-432.0PS.
Chlanda, Frederick P.; and Mani, Krishnamurthy N., 4,608,141, Cl. 204-182.500.
Frollini, Dominick, Jr.; Falconer, Dennis G.; and Kato, Kenneth J., 4,608,148, Cl. 204-408.000.
Gonczy, Stephen T.; Lawson, Randy J.; and Rosen, Bruce I., 4,608,215, Cl. 264-56.000.

Allied Tube & Conduit Corporation: *See—*
Vollmuth, Lawrence P.; and Byrd, Lucid L., 4,608,471, Cl. 219-8.500.

Allred, John C. Method and apparatus for controlling reverberation of sound in enclosed environments. 4,607,466, Cl. 52-144.000.

Allred, Mark: *See—*
Allred, Von D.; and Allred, Mark, 4,607,608, Cl. 126-30.000.

Allred, Von D.; and Allred, Mark. Campfire cooking grill. 4,607,608, Cl. 126-30.000.

Alps Electric Co., Ltd.: *See—*
Igarashi, Masami; Kato, Yoshinori; and Kamijo, Yoshimi, 4,608,308, Cl. 428-408.000.
Makino, Akihiro; and Mukasa, Koichi, 4,608,228, Cl. 420-459.000.

Alumax, Inc.: *See—*
Dantzig, Jonathan A.; and Tyler, Derek E., 4,607,682, Cl. 164-418.000.

Aluminum Company of America: *See—*
Brown, Melvin H., 4,608,134, Cl. 204-67.000.
Brown, Melvin H., 4,608,135, Cl. 204-67.000.
Goodboy, Kenneth P., 4,608,363, Cl. 502-330.000.
Tsai, Mei-Yuan; Jacoby, John E.; and Laemmle, Joseph T., 4,607,679, Cl. 164-5.000.

Aluminum Pechiney: *See—*
Briolle, Emile; Hicter, Jean-Marie; and Mateos, Adolfo, 4,607,825, Cl. 266-215.000.

ALZA Corporation: *See—*
Cortese, Richard; and Theeuwes, Felix, 4,608,048, Cl. 604-890.000.

Amada, Eiichi: *See—*
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.

Amano, Tadashi: *See—*
Hakamada, Haruo; Amano, Tadashi; and Kamiyama, Hiromitsu, 4,607,949, Cl. 355-40.000.

Amariti, Luigi: *See—*
Bernstein, Carl; Arvanitis, Konstantinos; and Amariti, Luigi, 4,608,331, Cl. 430-156.000.

Amax Inc.: *See—*
Davison, Ralph M.; and Grobner, Paul J., 4,608,099, Cl. 148-37.000.

Ambesi-Impiombato, Francesco S., to Interthyr Research Foundation, Inc. Living, fast-growing thyroid cell strain, FRTL-5. 4,608,341, Cl. 435-240.000.

AmCan, Inc.: *See—*
Kaiser, Dennis G.; and Kaiser, Robert D., 4,607,450, Cl. 43-83.000.

Amco Corporation: *See—*
Ettlinger, Ralph; and Biela, John A., 4,607,795, Cl. 239-530.000.

Amemiya, Kouji: *See—*
Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, 4,608,438, Cl. 548-341.000.

American Cyanamid Company: *See—*
Conrow, Ransom B.; and Bernstein, Seymour, 4,608,205, Cl. 260-506.000.
Kohli, Dalip K., 4,608,431, Cl. 528-246.000.
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.
Los, Marinus, 4,608,079, Cl. 71-92.000.
Los, Marinus, 4,608,437, Cl. 548-301.000.
Mallipudi, Narayana M.; and Hollingshaus, John G., 4,608,371, Cl. 514-186.000.
Stern, Bruce A., 4,608,426, Cl. 528-170.000.

American District Telegraph Company: *See—*
Guscott, John K., 4,608,674, Cl. 367-93.000.

American Envelope Co.: *See—*
Jacob, Lewis E., 4,607,749, Cl. 206-610.000.
Meeker, David M., 4,607,433, Cl. 33-1.0BB.

American National Red Cross: *See—*
Kahn, Richard A.; and Rodey, Glenn E., 4,608,255, Cl. 424-101.000.

Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, to Coleco Industries, Inc. Glove puppet figure assembly with articulated head components. 4,608,025, Cl. 446-298.000.

Amoco Corporation: *See—*
Chang, Yuehsiung, 4,608,184, Cl. 252-42.700.
Watson, George H.; McWhorter, David B.; and Brown, Adrian, 4,608,126, Cl. 202-84.000.

AMP Incorporated: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,607,554, Cl. 83-277.000.

Ampex Corporation: *See—*
Lilley, Martin A., 4,608,604, Cl. 358-188.000.

Amstutz, Hermann; Kaufmann, Meinolph; and Scheffer, Terry J., to BBC Brown, Boveri & Company, Limited. Addressing method for a multiplexable, bistable liquid crystal display. 4,608,558, Cl. 340-784.000.

Analog Devices, KK: *See—*
Moriwaki, Ikuo; and Taniguchi, Shinji, 4,608,541, Cl. 330-10.000.

Anderson, J. Edward C., to Milbar Corporation. Pliers. 4,607,548, Cl. 81-427.000.

Anderson, Keith V., to Anderson Scientific. FM quadrature detector with ferrite bead tuned circuit. 4,608,538, Cl. 329-103.000.

Anderson Scientific: *See—*
Anderson, Keith V., 4,608,538, Cl. 329-103.000.

Andrade, Juan; Prescher, Gunter; and Samson, Marc, to Degussa Aktiengesellschaft. Method for the preparation of 1,4-butandial. 4,608,443, Cl. 568-454.000.

Andre, Wolfram K., to Kurt Wolf & Co. KG. Process for controlling the cooking process in a steam pressure cooker. 4,608,260, Cl. 426-233.000.

Andreozzi, William F. Children's drinking vessel. 4,607,755, Cl. 215-1.00A.

Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, to Daimler-Benz Aktiengesellschaft. Tripping apparatus for an occupant protection apparatus in vehicles. 4,608,501, Cl. 307-105.00B.

Andrews, Dolores: *See—*
Andrews, Joe; Andrews, Dolores; and Lockett, Beverly, 4,607,900, Cl. 339-37.000.

Andrews, Joe; Andrews, Dolores; and Lockett, Beverly. Telephone jack security devices. 4,607,900, Cl. 339-37.000.

Ang, Peter G. P.: *See—*
Morduchowitz, Abraham; and Ang, Peter G. P., 4,608,133, Cl. 204-59.00R.

Angelchik, Jean P. Method for treatment of morbid obesity. 4,607,618, Cl. 128-1.00R.

Anthimides, Sophokles: *See—*
McSorley, Harry J., Sr.; and Anthimides, Sophokles, 4,607,437, Cl. 33-374.000.

Antoci, Frank J.: *See—*
Bachenheimer, Bernard O.; Antoci, Frank J.; Carver, Edward L., Jr.; Pellegrino, Ernest N.; and Seltenreich, Richard C., 4,607,526, Cl. 73-432.0PS.

Aoki, Kongoh: *See—*
Kanoh, Junichi; and Aoki, Kongoh, 4,607,604, Cl. 123-572.000.

Appalachian Stove and Fabricators, Inc.: *See—*
Rice, James S.; Eavenson, Barry; Eavenson, Garry; and Bryson, Thomas A., 4,607,611, Cl. 126-121.000.

Aquino, Salvatore A. Collapsible podium. 4,607,817, Cl. 248-459.000.

Aragaki, Masaharu: *See—*
Ishii, Kenjiro; Aragaki, Masaharu; Kato, Osami; and Higashi, Masato, 4,607,950, Cl. 355-41.000.

Arai, Yoshinobu: *See—*
Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, 4,607,687, Cl. 165-104.190.

Arakawa, Toyomi: *See—*
Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, 4,607,645, Cl. 131-109.100.

Arakawa, Yasuo: *See—*
Aso, Toshiyuki; and Arakawa, Yasuo, 4,608,478, Cl. 219-69.00W.

Arakelyants, Sergei M.: *See—*
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Arce, Javier A.: *See—*
Fan, Lucy L.; and Arce, Javier A., 4,608,264, Cl. 426-438.000.

Arends, Albert W.: *See—*
Whiteside, Robert C.; and Arends, Albert W., 4,608,009, Cl. 425-590.000.

Arika, Tadashi: *See—*
Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, 4,608,438, Cl. 548-341.000.

Arima, Sumitsugu; Tsuda, Hiroshi; and Nagashima, Hideyuki, to Nissan Motor Co., Ltd. Steering wheel assembly with non-rotatable center hub. 4,607,539, Cl. 74-492.000.

Armin, Richard. Stringed musical instrument. 4,607,559, Cl. 84-275.000.

Arnold, Richard N.; and Harris, Haynie. Heater for a drum. 4,608,483, Cl. 219-201.000.

Aronsohn, Richard B. Skin formulation. 4,608,370, Cl. 514-159.000.

Arthur, Jonathan R. F.; and Dunstan, Trebilcock, to University College London. Apparatus for determining the behavior of powdered material under stress. 4,607,532, Cl. 73-819.000.

Arton, Kenneth A.: *See—*
Blomley, Peter F.; Arton, Kenneth A.; Whittaker, Edward J.; and Lefevre, Andrew P., 4,608,462, Cl. 179-81.00B.

Arvanitakis, Kostas S. Filter brush. 4,608,169, Cl. 210-334.000.

Arvanitis, Konstantinos: *See—*
Bernstein, Carl; Arvanitis, Konstantinos; and Amariti, Luigi, 4,608,331, Cl. 430-156.000.

Asahi Glass Company Ltd.: *See—*
Hamano, Toshikatsu, 4,608,393, Cl. 521-27.000.

Asahi, Naotatsu: *See—*
Sunano, Naomasa; and Asahi, Naotatsu, 4,608,232, Cl. 422-88.000.

Asahipen Corporation: *See—*
Nakajima, Jun; and Morinaga, Shiceki, 4,608,415, Cl. 525-111.500.

Asami, Hajime: *See—*
Yoshino, Shigeo; Zenbutsu, Tadashi; and Asami, Hajime, 4,608,087, Cl. 106-18.120.

Asano, Masakazu, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Side shifting attachment for fork lift trucks. 4,607,997, Cl. 414-667.000.

Asano, Nobuyoshi: *See—*
Kamigaichi, Hideyuki; Kurachi, Kazuto; Asano, Nobuyoshi; and Hanada, Tatsuo, 4,607,925, Cl. 354-63.000.

Ashworth, Lewis A. Reversible buffing pad and method of manufacture. 4,607,412, Cl. 15-230.180.

Aso, Toshiyuki; and Arakawa, Yasuo, to Fanuc Ltd. Wire electrode clamping mechanism of wire-cut electric discharge machine. 4,608,478, Cl. 219-69.00W.

Asoshina, Eishi: *See—*
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.

Astec Components, Ltd.: *See—*
Josephson, Elliot; and Parker, Frederick S., 4,608,625, Cl. 363-21.000.

Asulab S.A. - ESA 55: *See—*
Dinger, Rudolf J.; and Michel, Jean-Georges, 4,608,510, Cl. 310-361.000.

AT&T Bell Laboratories: *See—*
Baranyai, Lawrence; and Colton, John R., 4,608,693, Cl. 371-49.000.

Coldren, Larry A., 4,608,697, Cl. 372-50.000.
Hansen, Robert C.; Richardson, Calvin J.; and Schmitt, David A., 4,608,688, Cl. 371-11.000.
Hartman, Adrian R.; Riley, Terence J.; and Shackle, Peter W., 4,608,590, Cl. 357-38.000.
Kim, Ock-Ky, 4,608,586, Cl. 357-30.000.

AT&T Technologies, Inc.: *See—*
Paek, Un C.; and Schroeder, Charles M., Jr., 4,608,473, Cl. 219-10.49R.

Athey, Roy L.: *See—*
Miller, John A.; and Athey, Roy L., 4,608,094, Cl. 148-11.50N.

Atlantic Richfield Company: *See—*
Ingram, Alvin R., 4,608,394, Cl. 521-57.000.
Kesling, Haven S., Jr.; and Gillman, Hyman D., 4,608,197, Cl. 252-551.000.

Aubert, Jean-Jacques; Basset, Alain; Bechevet, Bernard; and Roulin, Claude, to Commissariat a l'Energie Atomique. Device for tensioning a thin plate. 4,608,234, Cl. 422-249.000.

Augart, Helmut: *See—*
Knecht, Adolf; and Augart, Helmut, 4,608,248, Cl. 424-19.000.

Autio, Markku, to Valmet OY. Frame construction in a paper machine press section for facilitating replacement of press rolls and fabrics. 4,608,125, Cl. 162-273.000.

Automotive Products plc: *See—*
Compton, David J.; Nix, Richard A.; and Leigh-Monstevens, Keith V., 4,607,670, Cl. 141-1.000.
Muller, Patrick, 4,607,738, Cl. 192-109.00R.

Avella, Frank J.; and Bowen, Leslie J., to GTE Laboratories Incorporated. Silicon nitride substrate. 4,608,354, Cl. 501-97.000.

Awane, Misao; Hara, Seiji; and Kobayashi, Satoshi, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Input unit of an automatic vending machine. 4,608,487, Cl. 235-383.000.

Azegami, Hitoshi: *See—*
Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, 4,608,315, Cl. 428-425.900.

B. F. Goodrich Company, The: *See—*
Kramer, James H.; and Orndorff, Roy L., Jr., 4,607,964, Cl. 384-98.000.

Babcock & Wilcox Company, The: *See—*
Twilley, Robert C., Jr., 4,608,223, Cl. 376-247.000.

Bachenheimer, Bernard O.; Antoci, Frank J.; Carver, Edward L., Jr.; Pellegrino, Ernest N.; and Seltenreich, Richard C., to Allied Corporation. Particle analysis system. 4,607,526, Cl. 73-432.0PS.

Bacrania, Kanti, to Harris Corporation. Programmable current mirror. 4,608,530, Cl. 323-315.000.

Baddour, Raymond F.: *See—*
Loh, Ih-Houng; Cohen, Robert E.; and Baddour, Raymond F., 4,608,309, Cl. 428-409.000.

Baerns, Manfred; and Hinsen, Wilhelm, to Baerns, Manfred. Process for the production of ethane and/or ethylene from methane. 4,608,449, Cl. 585-500.000.

Baggio, Guerrino: *See—*
Bissi, Maurizio; Cocco, Andrea; and Baggio, Guerrino, 4,607,854, Cl. 277-152.000.

Bagnaresi, Bruno: *See—*
Manservisi, Renato; and Bagnaresi, Bruno, 4,607,475, Cl. 53-150.000.

Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A. Semiconductor light emitter based on gallium nitride and process for manufacture thereof. 4,608,581, Cl. 357-17.000.

Bai, Monty W., to Motorola, Inc. Hermetically sealed impact switch. 4,608,468, Cl. 200-61.45R.

Baker, Donal E.: *See—*
Fox, David A.; and Baker, Donal E., 4,608,626, Cl. 363-56.000.

Baker Perkins Holdings PLC: *See—*
Lawson, Robert; Mason, Malcolm J.; and Maris, Peter I., 4,607,536, Cl. 73-863.910.

Balasubramanian, N.; and Helgesson, Alan L., to Matrix Instruments Inc. Braked media transport for laser scanners. 4,608,578, Cl. 346-160.000.

Ballard, Denis G. H.; Cundy, Colin S.; Rideal, Graham R.; and Morley, David C. W., to Imperial Chemical Industries PLC. Production of articles from minerals. 4,608,303, Cl. 428-357.000.

Balle, Gerhard; Paul, Reiner; and Rasshofer, Werner, to Bayer Aktiengesellschaft. Process for the production of optionally cellular moldings. 4,608,214, Cl. 264-45.500.

Bally Midway Mfg. Co.: *See—*
Romine, Edward L.; and Byczek, Roger W., 4,607,899, Cl. 339-19.000.

Banholzer, Rolf; and Bauer, Rudolf, to Boehringer Ingelheim KG. Quaternary 6,11-dihydro-dibenzo-[b,e]-thiepine-11-N-alkylnorscopine ethers having spasmolytic activity. 4,608,377, Cl. 514-291.000.

Bank of America NT&SA, administrator: *See—*
Vaughan, Ronald J., deceased; and Bank of America NT&SA, administrator, 4,608,136, Cl. 204-106.000.
Vaughan, Ronald J., deceased; and Bank of America NT&SA, administrator, 4,608,137, Cl. 204-129.000.

Baranyai, Lawrence; and Colton, John R., to AT&T Bell Laboratories. Fault detection arrangement for a digital conferencing system. 4,608,693, Cl. 371-49.000.

Barber, James C., to James C. Barber and Associates, Inc. Production of phosphorus and phosphoric acid. 4,608,241, Cl. 423-317.000.

Barclay, David; and Burgess, Peter H., to U.S. Philips Corporation. Energy filter for a Geiger-Muller tube. 4,608,511, Cl. 313-93.000.

Barclay, Randel L. Solid waste comminution machine. 4,607,800, Cl. 241-159.000.

Barnes, Russell D.: *See—*
Redick, Hugh E.; and Barnes, Russell D., 4,608,402, Cl. 523-215.000.

Baron, Walter J.; and Cleaver, Laird C., to Water Services of America, Inc. Basket retainer for heat exchanger tube cleaning element. 4,607,686, Cl. 165-95.000.

Barrett, Ronald A. Method and apparatus for dental restoration using light curable restoratives. 4,608,021, Cl. 433-229.000.

Barry, Robert L., to International Business Machines Corporation. Dual mode logic circuit for a memory array. 4,608,667, Cl. 365-189.000.

Barsellotti, John A., to Mitel Corporation. Two wire voice and data subscriber loop. 4,608,686, Cl. 370-69.100.

Barsk, Jaakko O., to Oy Partek Ab. Method for the casting of hollow slabs out of concrete. 4,608,216, Cl. 264-70.000.

Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., to International Business Machines Corporation. Automatically balancing and vertically justifying a plurality of text/graphics-columns. 4,608,664, Cl. 364-900.000.

BASF Aktiengesellschaft: *See—*
Acker, Rolf-Dieter; Karl, Rudolf; and Wuerzer, Bruno, 4,608,078, Cl. 71-88.000.
Mueller, Herbert, 4,608,422, Cl. 525-410.000.
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,608,416, Cl. 525-130.000.

BASF Corporation: *See—*
Parker, Edward J.; and Scott, Kenneth C., 4,608,188, Cl. 252-99.000.

Basset, Alain: *See—*
Aubert, Jean-Jacques; Basset, Alain; Bechevet, Bernard; and Roulin, Claude, 4,608,234, Cl. 422-249.000.

Batlivala, Percy P.; and Kurby, Christopher N., to Motorola, Inc. Simulcast transmission system. 4,608,699, Cl. 375-5.000.

Battelle Memorial Institute: *See—*
Carter, Timothy J. N.; Dahne, Claus; and Place, John F., 4,608,344, Cl. 436-34.000.

Bauer, Heinz; and Belloni, Aldo, to Linde Aktiengesellschaft. Recovery of C_{3+} hydrocarbons. 4,608,068, Cl. 62-18.000.

Bauer, Rudolf: *See—*
Banholzer, Rolf; and Bauer, Rudolf, 4,608,377, Cl. 514-291.000.

Bauman, Jack. Unitary insert support frame for the handle of an examining device. 4,607,623, Cl. 128-11.000.

Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., to Dow Corning Corporation. Method of producing elastomeric silicone foam. 4,608,396, Cl. 521-99.000.

Baxter Travenol Laboratories, Inc.: *See—*
Aalto, William R.; and Sertic, James L., 4,607,671, Cl. 141-329.000.
Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., 4,607,868, Cl. 285-332.000.

Bayer Aktiengesellschaft: *See—*
Balle, Gerhard; Paul, Reiner; and Rasshofer, Werner, 4,608,214, Cl. 264-45.500.
Buysch, Hans-Josef; and Mues, Peter, 4,608,207, Cl. 558-179.000.
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,608,399, Cl. 521-129.000.
Kerimis, Dimitrios; Muller, Hanns P.; and Kapps, Manfred, 4,608,407, Cl. 524-14.000.
Mohring, Edgar; Wagner, Kuno; and Muller, Hanns P., 4,608,446, Cl. 568-863.000.
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, 4,608,413, Cl. 524-591.000.
Reischl, Artur, 4,608,397, Cl. 521-101.000.

Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., to Immucor, Inc. Testing for a blood group immunological reaction. 4,608,246, Cl. 424-11.000.

BBC Brown, Boveri & Company, Limited: *See—*
Amstutz, Hermann; Kaufmann, Meinolph; and Scheffer, Terry J., 4,608,558, Cl. 340-784.000.
Bischofberger, Walter; Eichholzer, Heinz; Graber, Werner; and Talir, Jiri, 4,608,470, Cl. 200-144.0AP.
Hartmann, Max; and Rollier, Michel, 4,607,971, Cl. 403-2.000.

Beall, George H.; Megles, John E., Jr.; and Pinckney, Linda R., to Corning Glass Works. Glass-ceramics containing cristobalite and potassium fluorrichterite. 4,608,348, Cl. 501-3.000.

Beals, Richard A., to Halliburton Company. Slew rate filter for logging cable signal pick-off. 4,608,636, Cl. 364-422.000.

Bechevet, Bernard: *See—*
Aubert, Jean-Jacques; Basset, Alain; Bechevet, Bernard; and Roulin, Claude, 4,608,234, Cl. 422-249.000.

Beck, Charles L. Agricultural apparatus with an automatic positioning mechanism and method. 4,607,716, Cl. 180-131.000.

Beck, Malcolm L.: *See—*
Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., 4,608,246, Cl. 424-11.000.

Becker, Hans; and Landes, Herwig, to Linde Aktiengesellschaft. Separation of higher boiling impurities from liquefied gases. 4,608,069, Cl. 62-26.000.

Beckman Instruments, Inc.: *See—*
Wright, Herschel E.; Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., 4,607,551, Cl. 83-54.000.

Becton Dickinson and Company: *See—*
Kapadia, Nikul S., 4,608,650, Cl. 364-508.000.

Witty, Thomas R.; Curry, Robert E.; and Smith, Roger E., 4,608,231, Cl. 422-61.000.

Belanger, Inc.: *See—*
Belanger, James A., 4,607,965, Cl. 384-299.000.

Belanger, James A., to Belanger, Inc. Composite bearing with metal housing having a bore, with a tubular plastic insert therein. 4,607,965, Cl. 384-299.000.

Bell, Floyd R.; and McKay, Thomas H. Endotracheal tube/stethoscope combination. 4,607,643, Cl. 128-715.000.

Bell, Gilbert C.; and Stanhope, Harry W., to Celanese Corporation. Process for spiral wrapping reinforcement filaments. 4,607,481, Cl. 57-3.000.

Bell & Howell Company: *See—*
Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., 4,607,833, Cl. 271-10.000.

Bell Telephone Laboratories, Incorporated: *See—*
McNair, Bruce E., 4,608,455, Cl. 178-22.170.

Belli, Aldo: *See—*
Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, 4,608,441, Cl. 562-466.000.

Bellofatto, Richard C., to Bellofatto, Richard C. Air and sea navigational instrument simulation and instructional aid. 4,608,022, Cl. 434-243.000.

Belloni, Aldo: *See—*
Bauer, Heinz; and Belloni, Aldo, 4,608,068, Cl. 62-18.000.

Beloit Corporation: *See—*
Silar, Steven J., 4,607,552, Cl. 83-71.000.

Belyanin, Vladimir V.: *See—*
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Bendall, Brian; and Flannery, Stephan W., to Meynell Valves Limited. Mixing valve. 4,607,788, Cl. 236-12.200.

Bender, Raymond L.: *See—*
Hood, Richard T.; and Bender, Raymond L., 4,608,408, Cl. 524-15.000.

Bennitt, Robert A., to Ingersoll-Rand Company. Uni-directional-flow, fluid valve assembly. 4,607,660, Cl. 137-512.100.

Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., to Miles Laboratories, Inc. #3B theophylline immunoassay employing 9-theophylline reagents. 4,608,336, Cl. 435-7.000.

Berbalk, Hermann, to Oerlikon-Boehringer GmbH. Turning machine for machining crankshafts. 4,607,550, Cl. 82-9.000.

Berberick, David R.: *See—*
Howard, William G.; and Berberick, David R., 4,608,322, Cl. 429-105.000.

Berger, Hans S.: *See—*
Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, 4,608,025, Cl. 446-298.000.

Berggren, Anders; Rohman, Hakan; and Ostrup, Leif. Surgical instrument for performing anastomosis with the aid of ring-like fastening elements and the fastening elements for performing anastomosis. 4,607,637, Cl. 128-334.00C.

Bergin, Ralph M.; Katz, Emanuel E.; and Widicus, Warren A., to Quaker Oats Company, The. Method for making flavored dipeptide sweetened comestible. 4,608,263, Cl. 426-303.000.

Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, to L. Schuler GmbH. Punch. 4,607,557, Cl. 83-687.000.

Bergmeister, Josef J. Can tab opener. 4,607,407, Cl. 7-156.000.

Bernstam, Victor A. Compositions, uses and methods creating reverse micelles for the clarification of biological fluids to obtain undistorted assay of analytes following clarification. 4,608,347, Cl. 436-175.000.

Bernstein, Carl; Arvanitis, Konstantinos; and Amariti, Luigi, to Witco Chemical Corporation. Photosensitive plates with diazonium composition layer and polyurethane photopolymer with unsaturation in side chain overlayer. 4,608,331, Cl. 430-156.000.

Bernstein, Seymour: *See—*
Conrow, Ransom B.; and Bernstein, Seymour, 4,608,205, Cl. 260-506.000.

Bersch, Friedrich. Apparatus for cleaning pipelines for beverages and the like. 4,607,410, Cl. 15-3.510.

Bersche, Joe C. Knot tying apparatus. 4,607,869, Cl. 289-17.000.

Berstein, Patrick; Crinion, Jonathan; Middlemiss, Robert J.; and Oomen, Peter. Data entry system. 4,608,486, Cl. 235-380.000.

Bianchi, Edward A.: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,607,554, Cl. 83-277.000.

Biber, Klaus: *See—*
Gartner, Hartmut; Biber, Klaus; and Greve, Peter, 4,607,919, Cl. 350-507.000.

Biela, John A.: *See—*
Ettlinger, Ralph; and Biela, John A., 4,607,795, Cl. 239-530.000.

Biermann, Kurt; Steppat, Gerhard; and Wehmeyer, Bodo, to Durkoppwerke GmbH. Cutting device in a sewing machine for cutting at least one thread chain or a sewn-on tape. 4,607,583, Cl. 112-130.000.

Bihl, Paul R.: *See—*
Ferdows, Houshang; Krug, Martin; and Bihl, Paul R., 4,607,497, Cl. 62-179.000.

Bio-Rad Laboratories, Inc.: *See—*
Penaluna, William A., 4,608,146, Cl. 204-299.00R.

Biotteau, Gerard, to S.A.R.L. Manufacture Francaise des Chaussures Eram. Conformable covering with high coefficient of friction. 4,608,287, Cl. 428-40.000.

Bischofberger, Walter; Eichholzer, Heinz; Graber, Werner; and Talir, Jiri, to BBC Brown Boveri & Company Ltd. High-voltage switch. 4,608,470, Cl. 200-144.0AP.

Bishop, Timothy E.: *See—*
Coady, Clive J.; Krajewski, John J.; and Bishop, Timothy E., 4,608,409, Cl. 524-199.000.

Bissi, Maurizio; Cocco, Andrea; and Baggio, Guerrino, to Simmel S.p.A. Oil seal for lubricated track chain joints, particularly for track type vehicles. 4,607,854, Cl. 277-152.000.

Bixler, Donald E.: *See—*
Wagner, David L. R.; and Bixler, Donald E., 4,607,655, Cl. 135-95.000.

Bizot, Henri; Brasselet, Gery-Charles J.; Louis, Jean-Paul; and Narcy, Georges, to S.N.E.C.M.A. Process and apparatus for laser drilling. 4,608,480, Cl. 219-121.0LK.

Bjerke, Robert K.: *See—*
Krampen, Adalbert A.; Ellis, Delbert O.; Bjerke, Robert K.; and Ward, James P., 4,608,102, Cl. 149-92.000.

Blackburn, John: *See—*
De Haan, Frans W.; and Blackburn, John, 4,607,812, Cl. 244-129.500.

Blair, Ron B., to Mobil Oil Corporation. Asynchronous parallel fixed point converter. 4,608,554, Cl. 340-347.0DD.

Blaisdell, Ronald G.; and Hough, Harold L., to GTE Products Corporation. Projection lamp unit with separable lamp capsule. 4,608,624, Cl. 362-226.000.

Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., to Boeing Company, The. Broad-band antenna structure having frequency-independent, low-loss ground plane. 4,608,572, Cl. 343-792.500.

BLASCHIM S.p.A.: *See—*
Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, 4,608,441, Cl. 562-466.000.

Bleeks, Thomas W.: *See—*
Sullivan, Thomas E.; and Bleeks, Thomas W., 4,608,091, Cl. 134-3.000.

Blenninger, Ernst: *See—*
Seidel, Albert; Neuking, Hartmut; and Blenninger, Ernst, 4,607,490, Cl. 62-51.000.

Blomley, Peter F.; Arton, Kenneth A.; Whittaker, Edward J.; and Lefevre, Andrew P., to International Standard Electric Corporation. Telephone instrument circuit. 4,608,462, Cl. 179-81.00B.

Bloomenthal, Jules: *See—*
Williams, Lance; and Bloomenthal, Jules, 4,608,596, Cl. 358-81.000.

Blue Circle Projects (Proprietary) Ltd.: *See—*
Moore, Richard P., 4,608,168, Cl. 210-274.000.

Bluem, Gary R.; Goodin, John W.; and Hickey, Larry G., to North States Industries, Inc. Adjustable gate for doorways. 4,607,455, Cl. 49-55.000.

Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, to Henkel Kommanditgesellschaft auf Aktien. 1-hydroxy-1,1-diphosphonic acids and cytostatic use thereof. 4,608,368, Cl. 514-107.000.

Boals, Wayne S. Automatic control system for water heaters. 4,607,615, Cl. 126-362.000.

Board of Governors of Wayne State University: *See—*
Rossmoore, Harold W., 4,608,183, Cl. 252-36.000.

Board of Regents for Oklahoma State Univ.: *See—*
Teeter, Robert G., 4,608,257, Cl. 424-166.000.

BOC Group plc, The: *See—*
Clapham, Thomas R., 4,607,634, Cl. 128-203.250.
Marshall, John, 4,608,067, Cl. 62-9.000.

Bochaton, Francois: *See—*
Celant, Jean J.; and Bochaton, Francois, 4,608,269, Cl. 427-28.000.

Boden, Richard M.; and Helm, John R., to International Flavors & Fragrances Inc. Oxobicyclononane derivatives, process for producing same and organoleptic uses thereof. 4,608,194, Cl. 252-522.00R.

Boden, Richard M.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,195, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,196, Cl. 252-522.00R.

Bodenmiller, Anton: *See—*
Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, 4,607,413, Cl. 15-301.000.

Bodin, Francois; Jouade , Pierre; and Le Guillant, Daniel, to Hutchinson. Hydraulic antivibration support. 4,607,828, Cl. 267-140.100.

Bodingbauer, Hans: *See—*
Saischek, Gerald; and Bodingbauer, Hans, 4,608,440, Cl. 556-7.000.

Boehringer Ingelheim KG: *See—*
Banholzer, Rolf; and Bauer, Rudolf, 4,608,377, Cl. 514-291.000.

Boehringer Ingelheim Pharmaceuticals, Inc.: *See—*
Lazer, Edward S., 4,608,381, Cl. 514-395.000.

Boehringer Mannheim GmbH: *See—*
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

Boeing Company, The: *See—*
Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., 4,608,572, Cl. 343-792.500.
Caldwell, John E.; Chapman, Michael R.; Goodwin, Kenneth J.; and Lowery, Patrick A., 4,608,220, Cl. 264-510.000.

Boetzkes, Klaus. Sealing cap having frangible means. 4,607,759, Cl. 220-266.000.

Bogdanovich, Viktor B.: *See*—
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Bogursky, Robert, to Burndy Corporation. Electrical connector requiring low mating force. 4,607,907, Cl. 339-258.00P.

Boisen, Bradford P., to Slope Indicator Company, The. Temperature compensated extensometer. 4,607,435, Cl. 33-125.00B.

Boliden Aktiebolag: *See*—
Holmstrom, Sven A.; and Johansson, Leif, 4,608,083, Cl. 75-83.000.

Bolt Technology Corporation: *See*—
Chelminski, Stephen V., 4,608,675, Cl. 367-189.000.

Bolton, Theodore S.; and Whitwell, Robert J., to Carrier Corporation. Method and apparatus for assembly of a room air conditioner housing. 4,607,499, Cl. 62-262.000.

Bolton, Theodore S.; and Leech, Brad G., to Carrier Corporation. Grille mounting for a room air conditioner. 4,607,500, Cl. 62-262.000.

Bomer, Michael O.; and Chudoba, Richard F., to General Motors Corporation. Ground fault voltage limiting for a locomotive electric traction motor. 4,608,619, Cl. 361-31.000.

Bonanno, Anthony J.: *See*—
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,608,120, Cl. 159-17.100.

Boon, Cornelis A. M.: *See*—
Nordholt, Ernst H.; and Boon, Cornelis A. M., 4,608,544, Cl. 331-109.000.

Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., to Honeywell Information Systems Inc. Method for decreasing execution time of numeric instructions. 4,608,633, Cl. 364-200.000.

Bopp & Reuther GmbH: *See*—
David, Walfried, 4,607,821, Cl. 251-329.000.

Borders, Donald B.: *See*—
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.

Borg-Warner Corporation: *See*—
Sproul, William D., 4,608,243, Cl. 423-409.000.

Bornhofen, James A., to Standard Grigsby, Inc. Stator for switch assembly. 4,608,466, Cl. 200-11.00D.

Borodulin, German; Persidsky, Maxim; and Shkolnik, Alexander. Expandable urethral bougie comprising bendable rods with reciprocating driver. 4,607,626, Cl. 128-43.000.

Boros, Laszlo : *See*—
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Borovicka, David A., Sr., to SCM Corporation. Thermoset acrylic latices for wood coating. 4,608,410, Cl. 524-512.000.

Borovtsev, Anatoly I.: *See*—
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Borroughs Tool & Equipment Corporation: *See*—
Okamuro, James A., 4,607,535, Cl. 73-862.470.

Borzatta, Valerio: *See*—
Cantatore, Giuseppe; and Borzatta, Valerio, 4,608,436, Cl. 546-188.000.

Borzoni, John, to Littelfuse, Inc. Miniature fuse. 4,608,548, Cl. 337-201.000.

Bossenmaier, Alban: *See*—
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.

Bottomore, David; and Gibson, Colin F., to Glidevale Building & Products Limited. Ventilator for use in a roof structure. 4,607,566, Cl. 98-37.000.

Boudot, Jean E.; and Mazeau, Jean P., to Corning Glass Works. Low PbO-containing glass for electrical devices. 4,608,351, Cl. 501-62.000.

Boutonnat, Maurice; and Rose, Gerard, to Charbonnages de France. Process and device for the remote transmission of signals and application to the detection and/or measurement of the quanity of combustible gas in an atmosphere. 4,608,552, Cl. 340-310.00R.

Bowditch, Philip N., to Charles Stark Draper Laboratory, Inc., The. System for folding limp material segments. 4,607,584, Cl. 112-147.000.

Bowen, Leslie J.: *See*—
Avella, Frank J.; and Bowen, Leslie J., 4,608,354, Cl. 501-97.000.

Bowman, William W., to Hoffman Controls Corporation. Proportional motor drive control. 4,607,789, Cl. 236-49.000.

Boyce, Peter F. Ocean wave energy converting vessel. 4,608,497, Cl. 290-53.000.

Boyle, John T. A., to John Wyeth & Brother Limited. Antifungal composition and method employing pyridinium compounds. 4,608,379, Cl. 514-318.000.

Bozine, Nicholas, to Burroughs Corporation. Repair tool for defective wrapped wire electrical connections. 4,607,669, Cl. 140-124.000.

Brachear, Howard. Fishing jug. 4,607,449, Cl. 43-43.110.

Brachet, Alain, to Service National Electricite de France. Nuclear reactor cooled by a liquid metal. 4,608,224, Cl. 376-405.000.

Bradbury, Donald R.: *See*—
Neukermans, Armand P.; Chiang, Kuo L.; Schwettmann, Frederic N.; and Bradbury, Donald R., 4,608,326, Cl. 430-5.000.

Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., to Honeywell Information Systems Inc. Arithmetic logic unit with outputs indicating invalid computation results caused by invalid operands. 4,608,659, Cl. 364-737.000.

Brambilla, Luigi: *See*—
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.

Brambley, Roger J., to Standard Telephones and Cables Public Limited Company. Optical fibres. 4,608,273, Cl. 427-54.100.

Brand-Rex Company: *See*—
Vaden, James L., 4,607,905, Cl. 339-176.00M.

Brandhorst, Henry W., Jr.: *See*—
Weinberg, Irving; and Brandhorst, Henry W., Jr., 4,608,452, Cl. 136-261.000.

Brandt, Incorporated: *See*—
Sherman, William, III; Larkin, Francis C.; and Horvath, Stephen J., 4,608,704, Cl. 377-8.000.
Taipale, Dale L.; and Winkelman, John H., 4,607,649, Cl. 133-3.00C.

Braselton, Keith. Baseboard edge taping tool. 4,608,116, Cl. 156-523.000.

Brasselet, Gery-Charles J.: *See*—
Bizot, Henri; Brasselet, Gery-Charles J.; Louis, Jean-Paul; and Narcy, Georges, 4,608,480, Cl. 219-121.0LK.

Brasted, Lee K.; and Uppencamp, George L., to Shell Oil Company. Method and apparatus for installation of an offshore platform. 4,607,982, Cl. 405-204.000.

Breitenstein, Charles T.; and Holecek, Allen R., to Spiral Step Tool Company. Automatic tool grinding machine with computerized control. 4,608,643, Cl. 364-474.000.

Brenk, Michael, to Hoechst Aktiengesellschaft. Process for the anodic oxidation of aluminum and use thereof as support material for offset printing plates. 4,608,131, Cl. 204-33.000.

Brennan, Cynthia B.; and Brennan, Louis G., to Aller-Screen, Inc. Skin testing device with funnel loading. 4,607,632, Cl. 128-743.000.

Brennan, Louis G.: *See*—
Brennan, Cynthia B.; and Brennan, Louis G., 4,607,632, Cl. 128-743.000.

Brewer, Harold L.: *See*—
Maw, Bryan W.; and Brewer, Harold L., 4,607,452, Cl. 47-1.00R.

Bridges, Charles D., to Combustion Engineering, Inc. Non-orienting, multiple ported, cylindrical pressure transfer device. 4,607,691, Cl. 166-88.000.

Brief, John D. Apparatus for casting a net. 4,607,448, Cl. 43-8.000.

Brindopke, Gerhard; and Johannes, Gerhard, to Hoechst Aktiengesellschaft. Process for the preparation of acylurethanes, and the use thereof. 4,608,420, Cl. 525-375.000.

Brinkmann, Arnfried; and Lehners, Ernst, to Fahrleitungsbau GmbH. Safety ladder. 4,607,725, Cl. 182-189.000.

Brinkmann, Heinz: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

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Burghardt, Wilfried; Ernst, Hans-Hellmut; and Mayer, Josef, 4,607,805, Cl. 242-107.40A.

British Aerospace PLC: *See*—
Mansbridge, Martin H.; and Norton, John, 4,607,783, Cl. 228-265.000.

British Aerospace Public Limited Company: *See*—
Snell, Reginald J., 4,608,641, Cl. 364-434.000.

British-American Tobacco Company Limited: *See*—
Dashley, Frederick J.; and Dittrich, David J., 4,607,647, Cl. 131-365.000.

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Miller, Donald S., 4,607,702, Cl. 169-25.000.

British Petroleum Company p.l.c., The: *See*—
Caro, Colin G., 4,608,180, Cl. 210-780.000.

Brixner, Lothar H., to Du Pont de Nemours, E. I., and Company. X-ray image storage panel comprising anion-deficient BaFCl:Eu/BaFBr:Eu phosphors. 4,608,190, Cl. 252-301.40H.

Brocklehurst, Charles E., to Opelika Manufacturing Corporation. Automatic towel aligning, cutting and hemming system. 4,607,582, Cl. 112-121.120.

Brode, George L.: *See*—
Gardner, Hugh C.; Brode, George L.; and Cotter, Robert J., 4,608,404, Cl. 523-400.000.

Brodin, Arne F.: *See*—
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Panthuvanich, Siriporn, 4,608,278, Cl. 427-213.350.

Broemer, Heinz: *See*—
Reck, Ralf; Broemer, Heinz; Deutscher, Klaus; and Franek, Henning, 4,608,051, Cl. 623-10.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Hirata, Yoshikatsu; and Ishikawa, Shigeo, 4,607,967, Cl. 400-175.000.
Ueno, Hideo; Kuno, Hiroshi; and Hamabe, Yoshifumi, 4,607,966, Cl. 400-63.000.

Brothers, Michael V.; and Schaeffer, Bruce W., to Cooper Industries, Inc. Wand and wand extension. 4,607,974, Cl. 403-24.000.

Brouard, Rene : *See*—
Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, 4,608,411, Cl. 524-533.000.

Brown, Adrian: *See*—
Watson, George H.; McWhorter, David B.; and Brown, Adrian, 4,608,126, Cl. 202-84.000.
Brown, Allison T.: *See*—
Fowler, Stephen L.; and Brown, Allison T., 4,608,457, Cl. 179-2.00A.
Brown International Corporation: *See*—
Epperson, Donald E.; Curley, Orvin B.; and Swisher, Horton E., 4,608,266, Cl. 426-599.000.
Brown, James W.; Chen, Tsang J.; and Schen, Michael A., to Eastman Kodak Company. Latex compositions comprising loadable polymeric particles. 4,608,424, Cl. 526-240.000.
Brown, Melvin H., to Aluminum Company of America. Hall cell with inert liner. 4,608,134, Cl. 204-67.000.
Brown, Melvin H., to Aluminum Company of America. Hall cell. 4,608,135, Cl. 204-67.000.
Brown, Stephen A., to Dowty Mining Equipment Limited. Shield supports suitable for use in mines. 4,607,986, Cl. 405-296.000.
Brown, Thomas H., to Smith Kline & French Laboratories Limited. Substituted aminopyridones having histamine H_2-receptor blocking activity. 4,608,380, Cl. 514-318.000.
Brueckner, Keith A., to KMS Fusion, Inc. Method of achieving the controlled release of thermonuclear energy. 4,608,222, Cl. 376-104.000.
Brum, Roger D.: *See*—
Smith, David H.; and Brum, Roger D., 4,607,849, Cl. 273-348.100.
Brunner, Hans R.: *See*—
Curtis, Bernard J.; and Brunner, Hans R., 4,608,118, Cl. 156-643.000.
Brunswick Mfg. Co.: *See*—
Falzarano, Lorenzo; and Hewson, Carl, 4,608,498, Cl. 307-22.000.
Bryant, Steve M.; and Cole, Lanier G., to United States of America, Air Force. Fast envelope detector with bias compensation. 4,608,567, Cl. 343-7.00A.
Bryda, Roland. Variable-path surface transport system utilizing an angle comparator with a control guideway or externally supplied data for lateral offset, and method. 4,607,575, Cl. 104-304.000.
Bryson, Thomas A.: *See*—
Rice, James S.; Eavenson, Barry; Eavenson, Garry; and Bryson, Thomas A., 4,607,611, Cl. 126-121.000.
Buchegger, Rudolf; and Hirschmanner, Franz, to Voest-Alpine Aktiengesellschaft. Coiler-furnace unit. 4,608,014, Cl. 432-59.000.
Bucher-Guyer AG Maschinenfabrik: *See*—
Hauser, Hans-Ulrich, 4,607,570, Cl. 100-116.000.
Buck, Reinhold J.: *See*—
Goehl, Hermann J.; and Buck, Reinhold J., 4,608,172, Cl. 210-500.200.
Buckler, Robert T.: *See*—
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,608,336, Cl. 435-7.000.
Buckley, Thomas F., to Chevron Research Company. Modified succinimides (VI). 4,608,185, Cl. 252-51.50A.
Budd Company, The: *See*—
Freeman, Richard B., 4,608,453, Cl. 174-35.0MS.
Budwey, Michael J.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.
Buente, Stephen M.; and Clark, David P., to Eaton Corporation. Roller follower hydraulic tappet. 4,607,599, Cl. 123-90.500.
Burd, John F.: *See*—
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,608,336, Cl. 435-7.000.
Bure, Jacques: *See*—
Wierzbicki, Michel; and Bure, Jacques, 4,608,384, Cl. 514-413.000.
Burgers, Bernhardus W. A.; and Razenberg, Adrianus Johannes P. T., to Hollandse Signaalapparaten B.V. Communication receiving unit for the suppression of noise and interference signals. 4,608,701, Cl. 375-1.000.
Burgess, David A.; and King, Malcolm R., to International Standard Electric Corporation. Electro-acoustic transducer. 4,608,463, Cl. 179-115.50R.
Burgess, Peter H.: *See*—
Barclay, David; and Burgess, Peter H., 4,608,511, Cl. 313-93.000.
Burghardt, Wilfried; Ernst, Hans-Hellmut; and Mayer, Josef, to Britax-Kolb GmbH & Co. Safety belt emergency locking retractor. 4,607,805, Cl. 242-107.40A.
Burlington Industries, Inc.: *See*—
Schnegg, Julius R., 4,608,290, Cl. 428-101.000.
Burndy Corporation: *See*—
Bogursky, Robert, 4,607,907, Cl. 339-258.00P.
Burnham, Robert E., to Teledyne Industries, Inc. Ultraviolet monitor suntan alarm with self test routines. 4,608,492, Cl. 250-372.000.
Burns, Carmen D., to National Semiconductor Corporation. Non-impact thermocompression gang bonding method. 4,607,779, Cl. 228-106.000.
Burns, William K.; and Villarruel, Carl A., to United States of America, Navy. In-line optical fiber polarizer. 4,607,912, Cl. 350-96.300.
Burroughs Corporation: *See*—
Bozine, Nicholas, 4,607,669, Cl. 140-124.000.
Mitchell, John W., Jr., 4,607,685, Cl. 165-80.300.
Burt, Russell V.: *See*—
Williams, Paul R., Jr.; Burt, Russell V.; and Golden, Ronald, 4,608,406, Cl. 523-424.000.
Busot, J. Carlos; and Hill, Peter W., to University of South Florida, The. Rheotactic shrimp harvester. 4,607,595, Cl. 119-2.000.
Buss, Waldeen C.; and Wilson, Charles R., to Chevron Research Company. Preparation of a reforming catalyst. 4,608,356, Cl. 502-66.000.
Buysch, Hans-Josef; and Mues, Peter, to Bayer Aktiengesellschaft. Dialkyl 2-alkylcarbonatoethanephosphonates. 4,608,207, Cl. 558-179.000.
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., to Bayer Aktiengesellschaft. Stabilizer-containing reactive components for pu-foams, new stabilizers and a process for producing these stabilizers. 4,608,399, Cl. 521-129.000.
Byczek, Roger W.: *See*—
Romine, Edward L.; and Byczek, Roger W., 4,607,899, Cl. 339-19.000.
Byer, Robert L.: *See*—
Nightingale, John L.; Fejer, Martin M.; and Byer, Robert L., 4,607,776, Cl. 226-171.000.
Byers, Thomas L. Photographic image precision reproportioning system. 4,607,952, Cl. 355-84.000.
Byrd, Lucid L.: *See*—
Vollmuth, Lawrence P.; and Byrd, Lucid L., 4,608,471, Cl. 219-8.500.
Cadwell, George H., Jr., to Flanders Filters, Inc. Clean room adapted for variable work area configurations. 4,608,066, Cl. 55-385.00A.
Cain, Thomas A., to Filtertek, Inc. Press fit filter. 4,608,166, Cl. 210-232.000.
Calabrese, Thomas A. Foldable combination seat and portable container. 4,607,784, Cl. 229-27.000.
Caldwell, John E.; Chapman, Michael R.; Goodwin, Kenneth J.; and Lowery, Patrick A., to Boeing Company, The. Method of forming composite material articles. 4,608,220, Cl. 264-510.000.
Campbell, John R.: *See*—
Mark, Victor; and Campbell, John R., 4,608,430, Cl. 528-196.000.
Canadian Patents & Development Limited: *See*—
Cecco, Valentino; and Ghent, Hugh W., 4,608,534, Cl. 324-238.000.
Canfield, Douglas M.: *See*—
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Canon Kabushiki Kaisha: *See*—
Aihara, Yoshihiko, 4,607,931, Cl. 354-400.000.
Egawa, Akira; Kodaira, Takanori; and Namai, Akihiro, 4,607,932, Cl. 354-468.000.
Harada, Yuji, 4,608,465, Cl. 200-5.00A.
Honda, Haruhisa, 4,607,941, Cl. 355-3.00R.
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.
Kurokawa, Takashi, 4,608,063, Cl. 55-208.000.
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Okino, Tadashi, 4,608,605, Cl. 358-209.000.
Sato, Yukio, 4,608,689, Cl. 371-15.000.
Tanaka, Kano, 4,608,705, Cl. 377-18.000.
Cantatore, Giuseppe; and Borzatta, Valerio, to Ciba-Geigy S.p.A. Piperidine compounds. 4,608,436, Cl. 546-188.000.
Caplan, Arnold; and Syftestad, Glenn T. Bone protein purification process. 4,608,199, Cl. 530-414.000.
Caputo, Carlo: *See*—
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, 4,607,510, Cl. 70-95.000.
Cardenas, Carlos: *See*—
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Carena, Ugo, to Ing. C. Olivetti & C., S.p.A. Paper pressing device for printing machines. 4,607,968, Cl. 400-637.200.
Carl Schleicher & Schuell GmbH & Co. KG: *See*—
Clad, Andreas, 4,608,147, Cl. 204-301.000.
Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See*—
Gartner, Hartmut; Biber, Klaus; and Greve, Peter, 4,607,919, Cl. 350-507.000.
Carney, Joseph H.; and Lozano, Rudy. Plumbing test plug apparatus. 4,607,664, Cl. 138-89.000.
Caro, Colin G., to British Petroleum Company p.l.c., The. Separation process. 4,608,180, Cl. 210-780.000.
Carrier Corporation: *See*—
Bolton, Theodore S.; and Whitwell, Robert J., 4,607,499, Cl. 62-262.000.
Bolton, Theodore S.; and Leech, Brad G., 4,607,500, Cl. 62-262.000.
Carroll, David L.: *See*—
Tavss, Edward A.; and Carroll, David L., 4,608,285, Cl. 428-35.000.
Carter, Mark C. Quick erection collapsible shelter. 4,607,656, Cl. 135-110.000.
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, to ITT Corporation. Comprehensive automatic directory assistance apparatus and method thereof. 4,608,460, Cl. 179-6.110.
Carter, Timothy J. N.; Dahne, Claus; and Place, John F., to Battelle Memorial Institute. Method for the determination of species in solution with an optical wave-guide. 4,608,344, Cl. 436-34.000.
Caruolo, Antonio B.: *See*—
Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, 4,607,421, Cl. 29-157.10R.
Carver, Edward L., Jr.: *See*—
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Cary, Paul: *See*—
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Casella Aktiengesellschaft: *See—*
Greiner, Ulrich; Keil, Karl-Heinz; Heinrich, Rudolf; and Albrecht, Konrad, 4,608,277, Cl. 427-213.300.
Casparian, Robert E.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,608,120, Cl. 159-17.100.
Cassidy, Bruce A., to Republic Corporation. Apparatus and method for mine application. 4,607,984, Cl. 405-261.000.
Casso Solar Corporation: *See—*
Ford, James; and Canfield, Douglas M., 4,608,073, Cl. 65-163.000.
Castellarin, Silvano, to Gretag San Marco S.p.A. Device for transferring the film holders in a film developer. 4,607,930, Cl. 354-322.000.
Caudel, Edward R.; Magar, Surendar S.; and Gass, Wanda K., to Texas Instruments Incorporated. Microcomputer with offset in store-accumulator operations. 4,608,634, Cl. 364-200.000.
Cecco, Valentino; and Ghent, Hugh W., to Canadian Patents & Development Limited. Eddy current probe for detecting localized defects in cylindrical components. 4,608,534, Cl. 324-238.000.
Celanese Corporation: *See—*
Bell, Gilbert C.; and Stanhope, Harry W., 4,607,481, Cl. 57-3.000.
DeGooyer, William J., 4,608,405, Cl. 523-404.000.
Hsieh, Jih-Han, 4,608,338, Cl. 435-142.000.
Shimp, David A., 4,608,434, Cl. 528-422.000.
Williams, Paul R., Jr.; Burt, Russell V.; and Golden, Ronald, 4,608,406, Cl. 523-424.000.
Celant, Jean J.; and Bochaton, Francois, to W.C.C.E. World Can and Cap Engineering; and Celant, Jean Jacques. Electrostatic striping of three-part metal-can seams. 4,608,269, Cl. 427-28.000.
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Cellu-Craft Inc.: *See—*
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Celotex Corporation, The: *See—*
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Central Glass Company, Limited: *See—*
Inaba, Hiroshi; and Nishikawa, Kazuya, 4,608,570, Cl. 343-704.000.
Centre National de la Recherche Scientifique (CNRS): *See—*
Laurent, Yves; and Verdier, Patrick, 4,608,352, Cl. 501-73.000.
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Cerbone, Adam C., to Combustion Engineering, Inc. Compression pin load tester. 4,607,534, Cl. 73-862.010.
Chaki, Takao, to Clarion Co., Ltd. Pushbutton tuner. 4,607,537, Cl. 74-10.330.
Champigny, Marcel J.: *See—*
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Champion International Corporation: *See—*
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Chan, Philip T.: *See—*
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Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., to Cominco Ltd. Process for the flotation of insol from sylvinite ore. 4,608,154, Cl. 209-166.000.
Chang, Daniel M., to Clorox Company, The. Rubber toughened polyvinyl alcohol film compositions. 4,608,187, Cl. 252-90.000.
Chang, Yihua E.; Grasso, Lawrence J.; Gruodis, Algirdas J.; and Morgan, Carroll E., to International Business Machines Corporation. High-speed programmable timing generator. 4,608,706, Cl. 377-39.000.
Chang, Yuehsiung, to Amoco Corporation. Phenate process and composition improvement. 4,608,184, Cl. 252-42.700.
Chao, Edmund Y. S.: *See—*
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Charles Stark Draper Laboratory, Inc., The: *See—*
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Chelminski, Stephen V., to Bolt Technology Corporation. Land seismic source method and apparatus. 4,608,675, Cl. 367-189.000.
Chemie Linz Aktiengesellschaft: *See—*
Saischek, Gerald; and Bodingbauer, Hans, 4,608,440, Cl. 556-7.000.
Chen, Chih-Ming J.: *See—*
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Chen, Hsing-Yao, to RCA Corporation. Cathode-ray tube having a screen grid with asymmetric beam focusing means and refraction lens means formed therein. 4,608,515, Cl. 313-412.000.
Chen, Juei-Teng: *See—*
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.
Chen, Tsang J., to Eastman Kodak Company. Polycarbonate, latex compositions comprising such. 4,608,310, Cl. 428-412.000.
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Chersich, Claudio C.: *See—*
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Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., 4,607,700, Cl. 166-303.000.
Laxo, Darryl E., 4,607,397, Cl. 2-410.000.
Lew, Henry Y.; and Straus, Alan E., 4,608,204, Cl. 260-505.00N.
Miller, Stephen J., 4,608,151, Cl. 208-33.000.
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Vaughan, Ronald J., deceased; and Bank of America NT&SA, administrator, 4,608,136, Cl. 204-106.000.
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Chlanda, Frederick P.; and Mani, Krishnamurthy N., to Allied Corporation. Multichamber two-compartment electrodialytic water splitter and method of using same for basification of aqueous soluble salts. 4,608,141, Cl. 204-182.500.
Choate, Paul V., to N I Industries. Temperature compensating front sight. 4,607,445, Cl. 42-100.000.
Chodosh, Edward, to Chodosh, Wayne. Heat treatment of fabrics and other sheet material. 4,607,770, Cl. 223-28.000.
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Chow, Edward Y., to Schlumberger Technology Corporation. Temperature compensation for pressure gauges. 4,607,530, Cl. 73-708.000.
Choyce, David P. Apparatus and method for improving eyesight. 4,607,617, Cl. 128-1.00R.
Christensen, Anne V.: *See—*
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.
Christine, William C., to Trinity Foundation. Fluent product extraction system. 4,607,764, Cl. 222-207.000.
Chrysler Corporation: *See—*
Durand, Remie P., 4,607,901, Cl. 339-59.00L.
Heling, Dennis H., 4,607,884, Cl. 297-341.000.
Chu, John W.: *See—*
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Chu, Pochen, to Mobil Oil Corporation. Hydrocarbon conversion catalyst. 4,608,355, Cl. 502-68.000.
Chudoba, Richard F.: *See—*
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Chumichev, Vladimir A.: *See—*
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Chung, W. Reginald. Game and apparatus therefor. 4,607,847, Cl. 273-264.000.
Ciba-Geigy AG: *See—*
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Ciba-Geigy Corporation: *See—*
Ferrini, Pier G.; and Goschke, Richard, 4,608,382, Cl. 514-341.000.
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Cipelletti, Alberto, to Cipelletti, Ditta Alberto. Apparatus for the pasteurization of alimentary mixtures. 4,607,494, Cl. 62-62.000.
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Cipelletti, Alberto, 4,607,494, Cl. 62-62.000.

Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, to BLASCHIM S.p.A. Process for the preparation of arylalkanoic acids by oxidative rearrangement of arylalkanones. 4,608,441, Cl. 562-466.000.

Clad, Andreas, to Carl Schleicher & Schuell GmbH & Co. KG. Apparatus for the electro-elution and collecting of electrically charged macromolecules in a trap. 4,608,147, Cl. 204-301.000.

Clapham, Thomas R., to BOC Group plc, The. Anaesthetic vaporizer. 4,607,634, Cl. 128-203.250.

Clarion Co., Ltd.: *See—*
Chaki, Takao, 4,607,537, Cl. 74-10.330.
Tsuchiya, Masahiro; and Mori, Masaharu, 4,608,540, Cl. 329-107.000.

Clark, David P.: *See—*
Buente, Stephen M.; and Clark, David P., 4,607,599, Cl. 123-90.500.

Claudio, Rubbini: *See—*
Ghedini, Luigi; Claudio, Rubbini; and Mauro, Grillini, 4,608,018, Cl. 433-88.000.

Clausen, Edgar C.: *See—*
Gaddy, James L.; and Clausen, Edgar C., 4,608,245, Cl. 423-531.000.

Clauss, Ulrich, to Markisen, Claus. Roll-up awning construction. 4,607,676, Cl. 160-74.000.

Clay, Truman R. Automobile tire-spanning beam outside calipers. 4,607,436, Cl. 33-143.00D.

Cleaver, Laird C.: *See—*
Baron, Walter J.; and Cleaver, Laird C., 4,607,686, Cl. 165-95.000.

Clegg, John E. Canada balsam wafers. 4,607,920, Cl. 350-536.000.

Clorox Company, The: *See—*
Chang, Daniel M., 4,608,187, Cl. 252-90.000.

Close, Rodney J.: *See—*
Mills, David; Kington, Alan D.; and Close, Rodney J., 4,607,680, Cl. 164-134.000.

Coady, Clive J.; Krajewski, John J.; and Bishop, Timothy E., to DeSoto, Inc. Polyacrylated oligomers in ultraviolet curable optical fiber coatings. 4,608,409, Cl. 524-199.000.

Cobbs, Walter H., Jr.; Shong, Robert G.; and Rehman, William R., to Nordson Corporation. Foamable thermosetting compositions and methods of coating therewith. 4,608,398, Cl. 521-113.000.

Cocco, Andrea: *See—*
Bissi, Maurizio; Cocco, Andrea; and Baggio, Guerrino, 4,607,854, Cl. 277-152.000.

Coenen, William M.: *See—*
Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., 4,608,246, Cl. 424-11.000.

Cohen, Robert E.: *See—*
Loh, Ih-Houng; Cohen, Robert E.; and Baddour, Raymond F., 4,608,309, Cl. 428-409.000.

Coldren, Larry A., to AT&T Bell Laboratories. Spectral control arrangement for coupled cavity laser. 4,608,697, Cl. 372-50.000.

Cole, Edward F., to United Technologies Corporation. Centrifugal main fuel pump. 4,607,486, Cl. 60-734.000.

Cole, George S. Valve with resilient tubes having constricted portions. 4,607,659, Cl. 137-454.200.

Cole, Lanier G.: *See—*
Bryant, Steve M.; and Cole, Lanier G., 4,608,567, Cl. 343-7.00A.

Cole, Martin T. Light absorbers. 4,607,915, Cl. 350-321.000.

Cole, Martin T. Smoke detection apparatus. 4,608,556, Cl. 340-628.000.

Coleco Industries, Inc.: *See—*
Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, 4,608,025, Cl. 446-298.000.

Colgate-Palmolive Company: *See—*
Tavss, Edward A.; and Carroll, David L., 4,608,285, Cl. 428-35.000.

College, Neil F.: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,607,554, Cl. 83-277.000.

Collina, Giancarlo, to Honeywell Information Systems Italia. Printer with sheet front loader. 4,607,969, Cl. 400-642.000.

Collins, Henry R., Jr., to Collins Products Company, Inc. Boiler water/boiler feed water automatic sampler system. 4,608,159, Cl. 210-101.000.

Collins, Leslie M., to Minnesota Mining and Manufacturing Company. Wear-resistant capstan for belt driven cartridge. 4,607,808, Cl. 242-192.000.

Collins Products Company, Inc.: *See—*
Collins, Henry R., Jr., 4,608,159, Cl. 210-101.000.

Colton, John R.: *See—*
Baranyai, Lawrence; and Colton, John R., 4,608,693, Cl. 371-49.000.

Combustion Engineering, Inc.: *See—*
Bridges, Charles D., 4,607,691, Cl. 166-88.000.
Cerbone, Adam C., 4,607,534, Cl. 73-862.010.

Comeau, Paul E., to Kenney Manufacturing Company. Mounting for blind. 4,607,677, Cl. 160-84.00R.

Cominco Ltd.: *See—*
Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., 4,608,154, Cl. 209-166.000.

Commissariat a l'Energie Atomique: *See—*
Aubert, Jean-Jacques; Basset, Alain; Bechevet, Bernard; and Roulin, Claude, 4,608,234, Cl. 422-249.000.
Desportes, Henri; and Meyer, Joao, 4,608,155, Cl. 209-224.000.
Fedeli, Jean-Marc; and Jouve, Hubert, 4,608,677, Cl. 365-19.000.

Compagnie des Transmissions Mechaniques Sedis: *See—*
Kohler, Bernard, 4,607,601, Cl. 123-90.310.

Completion Tool Company: *See—*
Wood, Edward T., 4,607,698, Cl. 166-285.000.

Compton, David J.; Nix, Richard A.; and Leigh-Monstevens, Keith V., to Automotive Products plc. Modular prefilled hydraulic control apparatus. 4,607,670, Cl. 141-1.000.

Computer Automation, Inc.: *See—*
Friedman, Michael S.; Thomas, Kenneth D.; and Chan, Philip T., 4,608,559, Cl. 340-825.500.

Comstock, Todd M. Candle apparatus. 4,608,011, Cl. 431-324.000.

Conax Buffalo Corporation: *See—*
Rhodes, Geoffrey M., 4,607,911, Cl. 350-96.200.

Concrete Systems, Inc.: *See—*
Ecker, Fred L., 4,607,470, Cl. 52-226.000.

Connell, Douglas D.: *See—*
Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., 4,608,572, Cl. 343-792.500.

Conoco Inc.: *See—*
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.
Lazear, Gregory D., 4,608,673, Cl. 367-43.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Polyanionic benzene ureas. 4,608,205, Cl. 260-506.000.

Construction Specialties, Inc.: *See—*
Olsen, Robert W., 4,607,471, Cl. 52-509.000.

Contact Systems, Inc.: *See—*
Mims, Bruce L., 4,607,782, Cl. 228-180.200.

Container Products Corporation: *See—*
Hughes, Joel, 4,608,062, Cl. 55-186.000.

Continental Gummi-Werke AG: *See—*
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.

Continental White Cap, Inc.: *See—*
Lecinski, Frank H., 4,607,757, Cl. 215-246.000.
Taber, James M.; and Kras, Stephen J., 4,607,768, Cl. 222-556.000.

Converse Inc.: *See—*
Roberts, Leslie E.; and Davis, Sumner F., 4,607,440, Cl. 36-114.000.

Coon, Timothy W. Power unit for self-unloading wagon. 4,607,735, Cl. 192-11.000.

Cooper, Charles F., to Morgan Thermic Limited. Gas burner. 4,608,012, Cl. 431-328.000.

Cooper Industries, Inc.: *See—*
Brothers, Michael V.; and Schaeffer, Bruce W., 4,607,974, Cl. 403-24.000.

Corbett, James O., to Electron Machine Corporation, The. Stock consistency transmitter. 4,607,955, Cl. 356-342.000.

Cordis Corporation: *See—*
Pohndorf, Peter J., 4,607,644, Cl. 128-785.000.
Stinnette, Russell A., 4,607,746, Cl. 206-53.000.

Cormode, Henry D. A.: *See—*
Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., 4,608,154, Cl. 209-166.000.

Cornell Research Foundation Inc.: *See—*
Ginos, James Z.; and Cotzias, George C., 4,608,391, Cl. 514-654.000.

Corning Glass Works: *See—*
Beall, George H.; Megles, John E., Jr.; and Pinckney, Linda R., 4,608,348, Cl. 501-3.000.
Boudot, Jean E.; and Mazeau, Jean P., 4,608,351, Cl. 501-62.000.
Kerko, David J.; Morgan, David W.; and Morse, David L., 4,608,349, Cl. 501-13.000.

Corrigan, John J., to Morehouse Industries, Inc. Control for slurry processing system. 4,608,029, Cl. 474-11.000.

Cortese, Richard; and Theeuwes, Felix, to ALZA Corporation. Dispensing device with drug delivery patterns. 4,608,048, Cl. 604-890.000.

Cortopassi, Jeffery J., to Taco Bell. Pocket wrap. 4,608,259, Cl. 426-115.000.

Cotter, Robert J.: *See—*
Gardner, Hugh C.; Brode, George L.; and Cotter, Robert J., 4,608,404, Cl. 523-400.000.

Cotzias, George C.: *See—*
Ginos, James Z.; and Cotzias, George C., 4,608,391, Cl. 514-654.000.

Council for Mineral Technology: *See—*
Fleming, Christopher A., 4,608,176, Cl. 210-677.000.

Courtman, Murray G., to Gibson, Brent William. Container. 4,607,756, Cl. 215-6.000.

Courtoy, Jean-Francois; and Marchal, Daniel, to Eurofloor S.A. Process for obtaining areas of distinctive appearance on synthetic coverings and the product derived therefrom. 4,608,294, Cl. 428-141.000.

Cox, Ron; and Pettovello, Elzi. Control for welding system. 4,608,482, Cl. 219-132.000.

CPG Products Corp.: *See—*
Newton, Jean M.; and Smith, William N., 4,608,026, Cl. 446-330.000.

Craig, Bonnie. Coverall garment with concealed seat panel. 4,607,396, Cl. 2-79.000.

Craig, Todd A.; and Jachetta, John J., to Union Carbide Corporation. Herbicidal cycloalkenyl acetamides. 4,608,082, Cl. 71-118.000.

Crainich, Lawrence, to Design Standards Corporation. Surgical staples. 4,607,638, Cl. 128-335.000.

Crane Co.: *See—*
Hankes, Robert W.; and Parker, Lloyd H., 4,608,162, Cl. 210-150.000.

Craun, Gary P.; and Abbey, Kirk J., to SCM Corporation. Electrocoating process using shear stable cationic latex. 4,608,139, Cl. 204-181.700.

Crinion, Jonathan: *See*—
Berstein, Patrick; Crinion, Jonathan; Middlemiss, Robert J.; and Oomen, Peter, 4,608,486, Cl. 235-380.000.

Crisman Sand Company, Inc.: *See*—
Scofield, Hartzell D., 4,607,427, Cl. 29-432.000.

Crisp, Edward T., Jr.; and Davidson, Willard M., Jr. Door security device. 4,607,870, Cl. 292-338.000.

Croce, Carlo M., to Wistar Institute, The. Human hybridomas and the production of human monoclonal antibodies by human hybridomas. 4,608,337, Cl. 435-68.000.

Croley, Thomas E., to Willamette Industries. Fiberboard flat with joined strengthened corners for setting up into an angular tray and the set-up tray. 4,607,785, Cl. 229-41.00B.

Croopnick, Gerald A.; and Scruggs, David M., to Dresser Industries, Inc. Extended surface area amorphous metallic material. 4,608,319, Cl. 428-613.000.

Crumbacher, Thomas A.: *See*—
Singh, Anand P.; Crumbacher, Thomas A.; Naylor, Gary R.; and Fagan, Thomas R., Jr., 4,608,219, Cl. 264-315.000.

Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
Roba, Giacomo, 4,608,070, Cl. 65-3.120.

Csiki, Kalman, to Gullfiber AB. Method for the production of an ear plug. 4,608,217, Cl. 264-249.000.

Cummens, Joseph R.: *See*—
Schafer, Thomas B.; Sindelar, William, deceased; and Cummens, Joseph R., 4,607,516, Cl. 72-405.000.

Cundy, Colin S.: *See*—
Ballard, Denis G. H.; Cundy, Colin S.; Rideal, Graham R.; and Morley, David C. W., 4,608,303, Cl. 428-357.000.

Curley, Edward, to Sunshine Biscuits, Inc. Conveying apparatus for crackers and related objects. 4,607,742, Cl. 198-398.000.

Curley, Orvin B.: *See*—
Epperson, Donald E.; Curley, Orvin B.; and Swisher, Horton E., 4,608,266, Cl. 426-599.000.

Currie, Bobby R. Mobile stone crusher. 4,607,799, Cl. 241-101.700.

Curry, Robert E.: *See*—
Witty, Thomas R.; Curry, Robert E.; and Smith, Roger E., 4,608,231, Cl. 422-61.000.

Curtice, Walter R., to RCA Corporation. FET amplifier. 4,608,583, Cl. 357-22.000.

Curtis, Bernard J.; and Brunner, Hans R., to RCA Corporation. Reactive sputter etching of metal silicate structures. 4,608,118, Cl. 156-643.000.

Cusher, Nelson A.: *See*—
Volles, Warren K.; and Cusher, Nelson A., 4,608,061, Cl. 55-26.000.

Czerwinski, Richard W.; and Osterberger, Larry D., to Gensco Inc. Hot melt composition and process for forming the same. 4,608,418, Cl. 524-296.000.

Dahne, Claus: *See*—
Carter, Timothy J. N.; Dahne, Claus; and Place, John F., 4,608,344, Cl. 436-34.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Takeuchi, Hideo; Kobayashi, Michiaki; and Shibasaki, Makoto, 4,607,571, Cl. 101-365.000.

Daido Kogyo Co., Ltd.: *See*—
Dono, Junichi, 4,608,036, Cl. 474-201.000.

Daihatsu Motor Co.: *See*—
Kouketsu, Eiji; and Tsumagari, Masato, 4,607,864, Cl. 280-808.000.

Daiho Construction Co., Ltd.: *See*—
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, 4,607,889, Cl. 299-33.000.

Daimler-Benz Aktiengesellschaft: *See*—
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.
Niemeier, Gerd, 4,608,161, Cl. 210-149.000.
Stahle, Werner; Weller, Karl-Heinz; and Stolz, Albert, 4,607,564, Cl. 98-2.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Miyasaka, Eiji, 4,607,836, Cl. 271-272.000.

D'Alessandro, Robert; Cardenas, Carlos; and Kaye, Gordon E., to Duracell Inc. Battery terminal connector and handle. 4,607,904, Cl. 339-108.00R.

Dam, Naim, to Introtek Corporation. Method and apparatus for detecting discontinuities in a fluid stream. 4,607,520, Cl. 73-19.000.

Damico, Frank M., to Detroit Edge Tool Company. Machine slide bearing assembly. 4,607,893, Cl. 384-45.000.

Damin, Bernard: *See*—
Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, 4,608,411, Cl. 524-533.000.

Dandge, Dileep K.: *See*—
Heller, John P.; and Dandge, Dileep K., 4,607,696, Cl. 166-275.000.

Daniel, Daniel S.; and Kissel, Thomas R., to Eastman Kodak Company. Potassium ion-selective compositions and electrodes containing same. 4,608,149, Cl. 204-418.000.

Danly Machine Corporation: *See*—
Schafer, Thomas B.; Sindelar, William, deceased; and Cummens, Joseph R., 4,607,516, Cl. 72-405.000.

Dantzig, Jonathan A.; and Tyler, Derek E., to Alumax, Inc. Mold for use in metal or metal alloy casting systems. 4,607,682, Cl. 164-418.000.

Daoust, Real. Exercising apparatus for use by hockey players to practice their slap and wrist-shots. 4,607,842, Cl. 273-1.00B.

Daroczi, Ivan: *See*—
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Darwent, Brian J., to Imperial Chemical Industries PLC. Electrode and electrolytic cell. 4,608,144, Cl. 204-257.000.

Das, Santanu: *See*—
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

Dashefsky, Joseph H. Patella support brace. 4,607,628, Cl. 128-80.00C.

Dashley, Frederick J.; and Dittrich, David J., to British-American Tobacco Company Limited. Smoking articles. 4,607,647, Cl. 131-365.000.

Dastin, Richard M., to Xerox Corporation. Adjustable sheet guide. 4,607,834, Cl. 271-171.000.

David, Walfried, to Bopp & Reuther GmbH. Shutoff valve. 4,607,821, Cl. 251-329.000.

Davidson, Willard M., Jr.: *See*—
Crisp, Edward T., Jr.; and Davidson, Willard M., Jr., 4,607,870, Cl. 292-338.000.

Davis, James W.; Moore, Victor S.; and Thoma, Nandor G., to International Business Machines Corporation. Differential cascode voltage switch (DCVS) master slice for high efficiency/custom density physical design. 4,608,649, Cl. 364-491.000.

Davis, Larry: *See*—
Effland, Richard C.; Davis, Larry; and Kapples, Kevin J., 4,608,374, Cl. 514-211.000.

Davis, Marshall E.; and Sung, Rodney L., to Texaco Inc. Clear stable motor fuel composition. 4,608,057, Cl. 44-51.000.

Davis, Ralph: *See*—
Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., 4,607,868, Cl. 285-332.000.

Davis, Richard J.; and Skandunas, Vince J. Ladder extension. 4,607,726, Cl. 182-204.000.

Davis, Robert D., Jr., to Ryerson & Haynes, Inc. Combination automobile folding tool. 4,607,406, Cl. 7-100.000.

Davis, Sumner F.: *See*—
Roberts, Leslie E.; and Davis, Sumner F., 4,607,440, Cl. 36-114.000.

Davison, Ralph M.; and Grobner, Paul J., to Amax Inc. General purpose maintenance-free constructional steel of superior processability. 4,608,099, Cl. 148-37.000.

Deal, Troy M. Continuous process for the dewatering of phosphate slimes. 4,608,179, Cl. 210-748.000.

de Brebisson, Michel X. M.; and Tessier, Marc, to U.S. Philips Corporation. Semiconductor device manufactured by using a multilayer mask. 4,608,588, Cl. 357-34.000.

Deckman, Harry W.; and Dunsmuir, John H., to Exxon Research and Engineering Co. Improvements in sensitivity of a positive polymer resist having a glass transition temperature through control of a molecular weight distribution and prebaked temperature. 4,608,281, Cl. 427-385.500.

Deckman, Harry W.: *See*—
Weinberger, Bernard R.; Deckman, Harry W.; and Yablonovitch, Eli, 4,608,097, Cl. 148-33.300.

Deep Ocean Engineering Incorporated: *See*—
Hawkes, Graham S., 4,607,998, Cl. 414-735.000.

Deere & Company: *See*—
Landphair, Donald K.; and Salley, Gordon L., 4,607,708, Cl. 172-776.000.
Paisley, Daniel J., 4,607,730, Cl. 188-170.000.
Shellhouse, Wayne L.; and VanAuwelaer, James M., 4,607,707, Cl. 172-764.000.

DeFrange, Eugene R. Wall and rafter layout tool. 4,607,438, Cl. 33-451.000.

DeGooyer, William J., to Celanese Corporation. Aqueous based epoxy resin curing agents. 4,608,405, Cl. 523-404.000.

Degussa Aktiengesellschaft: *See*—
Andrade, Juan; Prescher, Gunter; and Samson, Marc, 4,608,443, Cl. 568-454.000.
Strack, Hans; and Kleinschmit, Peter, 4,608,236, Cl. 423-118.000.

De Haan, Frans W.; and Blackburn, John, to Fokker B.V. Hinge mechanism for an aircraft door. 4,607,812, Cl. 244-129.500.

Deichelbohrer, Paul R., to United States of America, Energy. Electric arc saw apparatus. 4,608,477, Cl. 219-69.00V.

DeKalb-Pfizer Genetics: *See*—
Troyer, A. Forrest, 4,607,453, Cl. 47-58.000.

del Fierro, Jose M. Q. Head restraint for child's seat. 4,607,885, Cl. 297-397.000.

DeLisle, David S.; and Marino, James P. Hat brim press. 4,607,769, Cl. 223-12.000.

Delu-Luftkissentransportgeratetechnik GmbH: *See*—
Michels, Hartwig; and Klingler, Knud, 4,607,715, Cl. 180-118.000.

Demus, Wolfgang; and Katterloher, Reinhard, to Max-Planck-Gesellschaft. Linear adjusting device. 4,607,492, Cl. 62-55.500.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Kitsunai, Tomoyuki; Miura, Tetsuji; and Yagi, Norio, 4,608,414, Cl. 525-71.000.
Sugihara, Isao; Nishijima, Akio; and Toriguchi, Michio, 4,608,244, Cl. 423-445.000.

Denman, Owen S.: *See*—
Krage, William G.; and Denman, Owen S., 4,607,824, Cl. 256-13.100.

Dento-Med Industries Incorporated: *See*—
Lokken, Oddvin, 4,608,088, Cl. 106-35.000.

Dentsply Research & Development Corp.: *See*—
Gonser, Donald I., 4,608,622, Cl. 362-32.000.

Deram, Georges E.; and Panczyk, Maurice A., to Poclain. Mobile machine comprising a stabilizing device. 4,607,862, Cl. 280-765.100.

Deraspan Corporation: *See—*
Aldrich, Donald F., 4,608,103, Cl. 156-64.000.

Dergazarian, Thomas E.: *See—*
Meyer, Victor E.; and Dergazarian, Thomas E., 4,608,433, Cl. 528-388.000.

DeRisi, Joseph. Fireplace furnace. 4,607,612, Cl. 126-121.000.

Design Standards Corporation: *See—*
Crainich, Lawrence, 4,607,638, Cl. 128-335.000.

Desmarais, Claude: *See—*
Desmarais, Gerard; and Desmarais, Claude, 4,607,442, Cl. 40-152.000.

Desmarais & Frere Ltd: *See—*
Desmarais, Gerard; and Desmarais, Claude, 4,607,442, Cl. 40-152.000.

Desmarais, Gerard; and Desmarais, Claude, to Desmarais & Frere Ltd. Slide mount. 4,607,442, Cl. 40-152.000.

DeSoto, Inc.: *See—*
Coady, Clive J.; Krajewski, John J.; and Bishop, Timothy E., 4,608,409, Cl. 524-199.000.

Desportes, Henri; and Meyer, Joao, to Commissariat a l'Energie Atomique. Magnetic separator. 4,608,155, Cl. 209-224.000.

Detroit Edge Tool Company: *See—*
Damico, Frank M., 4,607,893, Cl. 384-45.000.

Dette, Karl-Henning: *See—*
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.

Deutsch, Thomas F.: *See—*
Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,608,117, Cl. 156-610.000.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Kallergis, Michael, 4,607,528, Cl. 73-602.000.

Deutscher, Klaus: *See—*
Reck, Ralf; Broemer, Heinz; Deutscher, Klaus; and Franek, Henning, 4,608,051, Cl. 623-10.000.

Deville, Jean-Pierre, to SEB S.A. Process for manufacturing a cookery vessel. 4,607,512, Cl. 72-46.000.

Devlin, William L.: *See—*
Goodrich, Jerry L.; and Devlin, William L., 4,608,646, Cl. 364-478.000.

Devon, Thomas J., to Eastman Kodak Company. Removal of iron pentacarbonyl from gaseous streams containing carbon monoxide. 4,608,239, Cl. 423-210.000.

Dickert, Joseph J., Jr.; and Heilweil, Israel J., to Mobil Oil Corporation. Vinyl sulfonate amide copolymer and terpolymer combinations for control of filtration in water-based drilling fluids at high temperature. 4,608,182, Cl. 252-8.512.

Dickey, Frank R., Jr.; and Penn, William A., to General Electric Company. Adaptive signal processor for interference cancellation. 4,608,569, Cl. 343-384.000.

Didier, Laurent; and Geay, Jean C., to Es swein S.A. Method for determining a moment of inertia of clothes in a washing and/or drying machine. 4,607,408, Cl. 8-159.000.

Die Firma J. Eberspacher: *See—*
Gaysert, Gerhard; and Gotz, Dieter, 4,608,013, Cl. 431-1.000.

Dietmann, Karl, deceased: *See—*
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

Dietmann, Lieselotte, heiress: *See—*
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

Dijkmans, Eise C.; Graffenberger, Wilhelm; and Kilian, Ernst A., to U.S. Philips Corporation. I^2L gate circuit arrangement having a switchable current source. 4,608,502, Cl. 307-243.000.

DiMartini, Carl; and Lane, John, to Fry Metals, Inc. Pb-Sn-Sb-Ag solder alloy. 4,608,230, Cl. 420-566.000.

Dinger, Rudolf J.; and Michel, Jean-Georges, to Asulab S.A. - ESA 55. Piezoelectric micro-resonateur. 4,608,510, Cl. 310-361.000.

Dinh Company, Inc.: *See—*
Dinh, Khanh, 4,607,498, Cl. 62-185.000.

Dinh, Khanh, to Dinh Company, Inc. High efficiency air-conditioner/-dehumidifier. 4,607,498, Cl. 62-185.000.

Dittrich, David J.: *See—*
Dashley, Frederick J.; and Dittrich, David J., 4,607,647, Cl. 131-365.000.

Dodge, Paul D., to Tennant Company. Membrane remover/etchant. 4,608,086, Cl. 106-12.000.

Dodge, Peter W. Throttle and brake control apparatus. 4,607,733, Cl. 192-3.00S.

Doi, Tetsuo: *See—*
Saito, Yashitane; Doi, Tetsuo; and Hirase, Kiyoto, 4,608,628, Cl. 364-141.000.

Dommer, Hans-Martin: *See—*
Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,607,557, Cl. 83-687.000.

Dono, Junichi, to Daido Kogyo Co., Ltd. Chain V-belt. 4,608,036, Cl. 474-201.000.

Dorina Nahmaschinen GmbH: *See—*
Meier, Gunter, 4,607,585, Cl. 112-454.000.

Dorman, Linneaus C.; and Meyer, Victor E., to Dow Chemical Company, The. Cyclic iminoether modified copolymers as improved adhesives. 4,608,419, Cl. 525-329.900.

Dorner, Karl H.: *See—*
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,608,399, Cl. 521-129.000.

Doty, Gerald A., to Gateway Industries, Inc. Safety belt buckle with switch. 4,608,469, Cl. 200-61.58B.

Dow Chemical Company, The: *See—*
Dorman, Linneaus C.; and Meyer, Victor E., 4,608,419, Cl. 525-329.900.
Hickner, Richard A.; Owens, Kevin A.; and Grays, Gwendolyn M., 4,608,313, Cl. 428-414.000.
Meyer, Victor E.; and Dergazarian, Thomas E., 4,608,433, Cl. 528-388.000.
Robinson, Richard M.; and Svarc, Gordon, 4,608,280, Cl. 427-230.000.

Dow Corning Corporation: *See—*
Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., 4,608,396, Cl. 521-99.000.
Freiberg, Alan L., 4,608,412, Cl. 524-724.000.
Varaprath, Padmakumari J., 4,608,270, Cl. 427-35.000.
Vincent, Gary A., 4,608,306, Cl. 428-391.000.

Dowty Mining Equipment Limited: *See—*
Brown, Stephen A., 4,607,986, Cl. 405-296.000.

Drake, Charles A., to Phillips Petroleum Company. Catalyst for the production of allyl acetate. 4,608,362, Cl. 502-243.000.

Dresser Industries, Inc.: *See—*
Croopnick, Gerald A.; and Scruggs, David M., 4,608,319, Cl. 428-613.000.

Dries, Edgar: *See—*
Welschof, Hans-Heinrich; and Dries, Edgar, 4,608,028, Cl. 464-145.000.

Drum, Henner, to Hoechst Aktiengesellschaft. Paper support. 4,608,295, Cl. 428-202.000.

Drummond, Graham J.: *See—*
Rugis, John W.; and Drummond, Graham J., 4,607,719, Cl. 180-272.000.

Drummond and Relph Limited: *See—*
Rugis, John W.; and Drummond, Graham J., 4,607,719, Cl. 180-272.000.

Dubenkov, Nikolai I.: *See—*
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Duda, Henry J., to Randall Equipment Company. Awning latch assembly. 4,607,654, Cl. 135-89.000.

Dudding, John: *See—*
Shreck, Peter K.; and Dudding, John, 4,608,601, Cl. 358-146.000.

Dudzik, Joachim: *See—*
Spindler, Heinz, 4,608,288, Cl. 428-78.000.

Dudzik, Winifred: *See—*
Spindler, Heinz, 4,608,288, Cl. 428-78.000.

Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., to Chevron Research Company. Alpha-olefin sulfonate dimer surfactant cyclic steam stimulation process for recovering hydrocarbons from a subterranean formation. 4,607,700, Cl. 166-303.000.

Dunker, Friedrich W.; and Ossenberg-Engels, Walter, to Rump, Joh. Moritz. Hand needle for knitting or crochet. 4,607,505, Cl. 66-117.000.

Dunlap, John H.: *See—*
Hedler, Robert C.; Kohler, Robert D.; and Dunlap, John H., 4,608,709, Cl. 382-1.000.

Dunn, James K.: *See—*
Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, 4,607,421, Cl. 29-157.10R.

Dunsmuir, John H.: *See—*
Deckman, Harry W.; and Dunsmuir, John H., 4,608,281, Cl. 427-385.500.

Dunstan, Trebilcock: *See—*
Arthur, Jonathan R. F.; and Dunstan, Trebilcock, 4,607,532, Cl. 73-819.000.

Du Pont de Nemours, E. I., and Company: *See—*
Brixner, Lothar H., 4,608,190, Cl. 252-301.40H.
England, David C.; and Howard, Edward G., Jr., 4,608,206, Cl. 260-544.00F.
Gale, David M.; and Shin, Hyunkook, 4,608,089, Cl. 106-90.000.
Howard, Edward G., Jr., 4,608,350, Cl. 501-20.000.
Redick, Hugh E.; and Barnes, Russell D., 4,608,402, Cl. 523-215.000.
Sweeny, Wilfred; and Kwolek, Stephanie L., 4,608,427, Cl. 528-179.000.

Duracell Inc.: *See—*
D'Alessandro, Robert; Cardenas, Carlos; and Kaye, Gordon E., 4,607,904, Cl. 339-108.00R.
Ismail, Mohamed I., 4,608,325, Cl. 429-217.000.
Zaborney, John F., 4,608,323, Cl. 429-167.000.

Durand, Remie P., to Chrysler Corporation. Mold fill wall for snap-in terminal retention. 4,607,901, Cl. 339-59.00L.

Durkoppwerke GmbH: *See—*
Biermann, Kurt; Steppat, Gerhard; and Wehmeyer, Bodo, 4,607,583, Cl. 112-130.000.

Dutilh, Christian E., to Thomas J. Lipton Inc. Lecithin-containing food product. 4,608,267, Cl. 426-662.000.

Dutton, Patrick F., to International Business Machines Corporation. Bit steering apparatus and method for correcting errors in stored data, storing the address of the corrected data and using the address to maintain a correct data condition. 4,608,687, Cl. 371-10.000.

Duvvury, Charvaka; and Hyslop, Adin E., to Texas Instruments Incorporated. CMOS sense amplifier with N-channel sensing. 4,608,670, Cl. 365-205.000.

Dzhanelidze, Rusudan B.: *See—*
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

E et M Lamort: *See—*
Lamort, Jean-Pierre J., 4,607,802, Cl. 241-46.00B.

E. R. Squibb & Sons, Inc.: *See—*
Hall, Steven E.; and Han, Wen-Ching, 4,608,386, Cl. 514-469.000.

E-Systems, Inc.: *See—*
White, Thomas E.; and Fowler, Brooks C., 4,608,647, Cl. 364-481.000.

Eagle Electric Mfg. Co., Inc.: *See—*
Munroe, Ronald G., 4,607,906, Cl. 339-192.00R.

Eastman Kodak Company: *See—*
Brown, James W.; Chen, Tsang J.; and Schen, Michael A., 4,608,424, Cl. 526-240.000.
Chen, Tsang J., 4,608,310, Cl. 428-412.000.
Daniel, Daniel S.; and Kissel, Thomas R., 4,608,149, Cl. 204-418.000.
Devon, Thomas J., 4,608,239, Cl. 423-210.000.
Kindt, Robert J.; and Peffer, Robert M., 4,607,935, Cl. 355-3.0TR.
Rushing, Allen J., 4,607,944, Cl. 355-14.00D.

Easy Handling Co., Inc.: *See—*
Pomaville, Ronald C.; and Landane, Jack, 4,607,678, Cl. 160-332.000.

Eaton Corporation: *See—*
Buente, Stephen M.; and Clark, David P., 4,607,599, Cl. 123-90.500.

Eaton, George F.: *See—*
Hsiung, Andrew K.; Eaton, George F.; and Hemphill, Brian W., 4,608,181, Cl. 210-786.000.

Eavenson, Barry: *See—*
Rice, James S.; Eavenson, Barry; Eavenson, Garry; and Bryson, Thomas A., 4,607,611, Cl. 126-121.000.

Eavenson, Garry: *See—*
Rice, James S.; Eavenson, Barry; Eavenson, Garry; and Bryson, Thomas A., 4,607,611, Cl. 126-121.000.

Eberle, Robert A. Shower head which uniformly dispenses liquid additives. 4,607,793, Cl. 239-318.000.

Ebihara, Yoshiyuki, to Etona Company, Limited. Stapler. 4,607,777, Cl. 227-120.000.

Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, to International Standard Electric Corporation. Electro-optical device. 4,607,917, Cl. 350-392.000.

Eckberg, Richard P.; Striker, Richard A.; and Modic, Frank J., to General Electric Company. Ultraviolet radiation curable silicone release compositions. 4,608,312, Cl. 428-419.000.

Ecker, Fred L., to Concrete Systems, Inc. Pre-stressed construction element. 4,607,470, Cl. 52-226.000.

Edmondson, Wayne L.: *See—*
Pendolino, Eugene F.; Edmondson, Wayne L.; and O'Neill, Michael L., 4,607,891, Cl. 299-92.000.

Effland, Richard C.; Davis, Larry; and Kapples, Kevin J., to Hoechst-Roussel Pharmaceuticals Inc. 11-substituted 5H,11H-pyrrolo[2,1-c][1,4]benzoxazepines as antipsychotic and analgesic agents. 4,608,374, Cl. 514-211.000.

Egami, Hidemi: *See—*
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.

Egawa, Akira; Kodaira, Takanori; and Namai, Akihiro, to Canon Kabushiki Kaisha. Battery checking device. 4,607,932, Cl. 354-468.000.

Egawa, Akira, to Kabushiki Kaisha Komatsu Seisakusho. Speed detecting device employing a Doppler radar. 4,608,568, Cl. 343-8.000.

Eggers, Alfred G., to Westinghouse Electric Corp. Unipak tie-down system. 4,607,990, Cl. 410-2.000.

Ehlus, Dennis W.; and Williams, Patrick J., to Paper Converting Machine Company. Apparatus for handling flat, flexible web products. 4,607,473, Cl. 53-54.000.

Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, to Massachusetts Institute of Technology. Maskless growth of patterned films. 4,608,117, Cl. 156-610.000.

Eichholzer, Heinz: *See—*
Bischofberger, Walter; Eichholzer, Heinz; Graber, Werner; and Talir, Jiri, 4,608,470, Cl. 200-144.0AP.

Eidling, Karl, to Siemens Aktiengesellschaft. Arrangement for stripping solid and stranded wires. 4,607,545, Cl. 81-9.510.

Eigenmann, Ludwig. Method and equipment for improving horizontal marking strips. 4,607,978, Cl. 404-73.000.

Eisenberg, Sidney W.; and Johnson, Gregory J., to General Motors Corporation. Hydraulic stabilizing system for vehicle suspension. 4,607,861, Cl. 280-702.000.

Ekono Oy: *See—*
Ostman, Per H., 4,608,121, Cl. 162-19.000.

Elam, Ormand K. Method and apparatus to rotate moving overlapping stacked boxes. 4,607,743, Cl. 198-415.000.

Electric Power Research Institute, Inc.: *See—*
Starkie, Alan H., 4,608,533, Cl. 324-142.000.

Electrical Accessories Ein Hashofet: *See—*
Iron, Gera, 4,608,547, Cl. 335-297.000.

Electro-Space Fabricators, Inc.: *See—*
Straccia, William J., Sr.; and Smous, Dale L., 4,607,751, Cl. 211-41.000.

Electron Machine Corporation, The: *See—*
Corbett, James O., 4,607,955, Cl. 356-342.000.

Elkhart Door Corporation: *See—*
Haines, Richard K., 4,607,816, Cl. 248-208.000.

Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., to USM Corporation. Adjustable alignment mechanism for a power reinforcing machine. 4,607,741, Cl. 198-345.000.

Ellis, Linda N.; and Spector, George. Jet stream water bed. 4,607,405, Cl. 5-451.000.

Ells, Delbert O.: *See—*
Krampen, Adalbert A.; Ells, Delbert O.; Bjerke, Robert K.; and Ward, James P., 4,608,102, Cl. 149-92.000.

Elm Co., Ltd.: *See—*
Hori, Kenichi, 4,608,577, Cl. 346-140.00R.

Elmec Corporation: *See—*
Sota, Yasuo, 4,608,467, Cl. 200-16.00D.

Emhart Industries, Inc.: *See—*
Fenton, Frank A., 4,608,072, Cl. 65-79.000.
Trahan, Albert J.; and Vajda, Vladimir, 4,608,075, Cl. 65-362.000.

Endo, Yoshinori; and Takao, Hisashi, to Otsuka Kagaku Kabushiki Kaisha. γ-Pyrone phosphoric ester derivatives and insecticidal and miticidal compositions thereof. 4,608,367, Cl. 514-89.000.

Energy Absorption Systems, Inc.: *See—*
Krage, William G.; and Denman, Owen S., 4,607,824, Cl. 256-13.100.

Energy Conversion Devices, Inc.: *See—*
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Engel, W. King, to University of Southern California. Treatment of neurologic functions. 4,608,365, Cl. 514-18.000.

Engelbrecht & Lemmerbrock GmbH & Co.: *See—*
Johanning, Hermann, 4,607,957, Cl. 366-156.000.

Engelhard Corporation: *See—*
Lanam, Richard D.; and Robertson, Allen R., 4,608,229, Cl. 420-464.000.
Silverman, Lance D.; and Speronello, Barry K., 4,608,357, Cl. 502-84.000.

England, David C.; and Howard, Edward G., Jr., to Du Pont de Nemours, E. I., and Company. Fluorinated 3-ketoglutaroyl halides. 4,608,206, Cl. 260-544.00F.

Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., to Nauchno-Proizvodstvennoe Obiedinenie "Norplast". Method of making powder from rubber and vulcanization products. 4,607,796, Cl. 241-3.000.

Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, to NPO Norplast; and Hermann Berstorff Maschinenbau GmbH. Method and apparatus for pulverizing polymers. 4,607,797, Cl. 241-23.000.

Ennis, David G.; and Smith, John M., to United States of America, Navy. Foliage-penetration surveillance radar. 4,608,566, Cl. 343-5.0PD.

Enns, Frederick: *See—*
Jain, Prem C.; and Enns, Frederick, 4,608,685, Cl. 370-85.000.

Ensign-Bickford Industries, Inc.: *See—*
Thureson, Gary R.; and Gladden, Ernest L., 4,607,573, Cl. 102-275.800.

Ensing, Hendrik; and Peulen, Jacobus H. M., to Oce-Nederland B.V. Contact fixing and cleaning method and apparatus. 4,607,947, Cl. 355-15.000.

Enso-Gutzeit Oy: *See—*
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.

Entac Company, Limited: *See—*
Nozawa, Yoshikuni, 4,607,803, Cl. 242-1.10R.

Enthone, Incorporated: *See—*
Sullivan, Thomas E.; and Bleeks, Thomas W., 4,608,091, Cl. 134-3.000.

Environmental Research Institute of Michigan: *See—*
Fienup, James R., 4,607,914, Cl. 350-320.000.

Epperson, Donald E.; Curley, Orvin B.; and Swisher, Horton E., to Brown International Corporation. Process for forming a citrus juice extender. 4,608,266, Cl. 426-599.000.

Erhard, Raymond, to SMID S.A. Guiding system for the carriage of a circular sawing machine. 4,607,555, Cl. 83-471.200.

Erlichman, Max. Protective sleeve device. 4,607,866, Cl. 285-45.000.

Ernst, Hans-Hellmut: *See—*
Burghardt, Wilfried; Ernst, Hans-Hellmut; and Mayer, Josef, 4,607,805, Cl. 242-107.40A.

Ernst Leitz Wetzlar GmbH: *See—*
Reck, Ralf; Broemer, Heinz; Deutscher, Klaus; and Franek, Henning, 4,608,051, Cl. 623-10.000.

Erwin, Timothy R., to Pitney Bowes Inc. Postage meter. 4,608,484, Cl. 235-101.000.

Es swein S.A.: *See—*
Didier, Laurent; and Geay, Jean C., 4,607,408, Cl. 8-159.000.

Esmil Hubert B.V.: *See—*
Rijpkema, Jan; and Uittenbogaart, Gustaaf A., 4,608,006, Cl. 425-347.000.

Esposito, Christopher, to Four Seasons Solar Products Corporation. Greenhouse construction provided with special ridge for ventilation. 4,607,567, Cl. 98-42.120.

Ethicon, Inc.: *See—*
Kula, John; and Miksza, Anthony S., Jr., 4,607,636, Cl. 128-334.00R.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,608,428, Cl. 528-192.000.

Etona Company, Limited: *See—*
Ebihara, Yoshiyuki, 4,607,777, Cl. 227-120.000.

Ettlinger, Ralph; and Biela, John A., to Amco Corporation. Spray head assembly. 4,607,795, Cl. 239-530.000.

Eudier, Michel; and Youssef, Hassan, to Alliages Frittes Metafram. Self-lubricating sintered bearing and process for the production thereof. 4,608,085, Cl. 75-247.000.

Eurofloor S.A.: *See—*
Courtoy, Jean-Francois; and Marchal, Daniel, 4,608,294, Cl. 428-141.000.

Exxon Production Research Co.: *See—*
Stephens, David J., 4,607,699, Cl. 166-303.000.

Exxon Research and Engineering Co.: *See—*
Deckman, Harry W.; and Dunsmuir, John H., 4,608,281, Cl. 427-385.500.
Feldman, Nicholas; and Panzer, Jerome, 4,608,345, Cl. 436-60.000.
Hudson, Carl W.; and Hamner, Glen P., 4,608,153, Cl. 208-112.000.
Peiffer, Dennis G.; and Lundberg, Robert D., 4,608,425, Cl. 526-241.000.
Wachs, Israel E.; Fiato, Rocco A.; and Chersich, Claudio C., 4,608,359, Cl. 502-177.000.
Weinberger, Bernard R.; Deckman, Harry W.; and Yablonovitch, Eli, 4,608,097, Cl. 148-33.300.

Faber, Thomas J.: *See—*
Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., 4,607,833, Cl. 271-10.000.

FAG Kugelfischer Georg Schafer (KGaA): *See—*
Schuster, Friedrich, 4,607,484, Cl. 57-337.000.

Fagan, Thomas R., Jr.: *See—*
Singh, Anand P.; Crumbacher, Thomas A.; Naylor, Gary R.; and Fagan, Thomas R., Jr., 4,608,219, Cl. 264-315.000.

Fahet NV: *See—*
Raubenheimer, Johann N., 4,608,167, Cl. 210-242.100.

Fahrleitungsbau GmbH: *See—*
Brinkmann, Arnfried; and Lehners, Ernst, 4,607,725, Cl. 182-189.000.

Fairbanks, Norman P., to General Electric Company. Electroplating tape. 4,608,145, Cl. 204-279.000.

Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, to H. Lundbeck A/S. Tetrahydroisoxazolo[4,5-c]pyridine derivatives useful in the treatment of malfunctions of the acetylcholine or muscarinic systems. 4,608,378, Cl. 514-302.000.

Falcomato, Rocco, to Niemand Bros. Inc. High temperature probe lance cover. 4,608,107, Cl. 156-190.000.

Falconer, Dennis G.: *See—*
Frollini, Dominick, Jr.; Falconer, Dennis G.; and Kato, Kenneth J., 4,608,148, Cl. 204-408.000.

Fallier, Charles N., Jr.; and Proud, Joseph M., to GTE Laboratories Incorporated. Dual spiral line generator method and apparatus for starting low wattage high intensity discharge lamps. 4,608,521, Cl. 315-47.000.

Falzarano, Lorenzo; and Hewson, Carl, to Brunswick Mfg. Co. Load control circuit with different input voltages. 4,608,498, Cl. 307-22.000.

Fan, Lucy L.; and Arce, Javier A., to Frito-Lay, Inc. Pretreatment of fried food products with oil containing emulsifiers. 4,608,264, Cl. 426-438.000.

Fanuc Ltd: *See—*
Aso, Toshiyuki; and Arakawa, Yasuo, 4,608,478, Cl. 219-69.00W.
Kiya, Nobuyuki, 4,608,644, Cl. 364-474.000.

Farkas, Bela: *See—*
Keresztessy nee Badi, Maria; Paka nee Kas, Eleonora; Gyongyossy, Lajos; Farkas, Bela; and Paku, Sandor, 4,608,090, Cl. 106-272.000.

Farmer, Edward R.; and Stillman, Allyn N., to General Electric Company. Method for applying abrasive particles to a surface. 4,608,128, Cl. 204-16.000.

Farris, Jimmy L. Vacuum exposure registry apparatus. 4,607,953, Cl. 355-91.000.

Faulconer, Mark, to U.S.D. Corp. Strap and retainer for a divers mask. 4,607,398, Cl. 2-452.000.

Faultless PCBS: *See—*
Wooten, Jack, 4,608,274, Cl. 427-96.000.

Fedde, Chris S., to Motorola, Inc. Spontaneous channel continuity scanning radio. 4,608,712, Cl. 455-166.000.

Fedeli, Jean-Marc; and Jouve, Hubert, to Commissariat a l'Energie Atomique. Magnetic bubble store. 4,608,677, Cl. 365-19.000.

Fejer, Martin M.: *See—*
Nightingale, John L.; Fejer, Martin M.; and Byer, Robert L., 4,607,776, Cl. 226-171.000.

Feld, Sam H.: *See—*
Oakley, David J.; and Feld, Sam H., 4,607,778, Cl. 228-2.500.

Feldman, Nicholas; and Panzer, Jerome, to Exxon Research and Engineering Co. Colorimetric detection of alcohols in gasoline. 4,608,345, Cl. 436-60.000.

Fenton, Frank A., to Emhart Industries, Inc. Method and apparatus for transferring articles of glassware from a blow station to conveyor means. 4,608,072, Cl. 65-79.000.

Ferdows, Houshang; Krug, Martin; and Bihl, Paul R., to Suetrak U.S.A. Roof-mounted air conditioner system having modular evaporator and condensor units. 4,607,497, Cl. 62-179.000.

Ferranti plc: *See—*
Mallinson, Andrew M., 4,608,529, Cl. 323-275.000.

Ferri, Edward T., Jr.; and Seaborn, Paul E., to Seaborn Development, Inc. Envelope folding system. 4,608,039, Cl. 493-164.000.

Ferrini, Pier G.; and Goschke, Richard, to Ciba-Geigy Corporation. 2-(Sulphinyl and sulfonyl)-4(5)-phenyl-5(4)-(3'-pyridyl)-imidazols. 4,608,382, Cl. 514-341.000.

Fiato, Rocco A.: *See—*
Wachs, Israel E.; Fiato, Rocco A.; and Chersich, Claudio C., 4,608,359, Cl. 502-177.000.

Fichter, Peter K., to Polaroid Corporation. Apparatus for processing and/or projecting transparency film assemblages. 4,607,926, Cl. 354-78.000.

Fienup, James R., to Environmental Research Institute of Michigan. Optical system design techniques using holographic optical element. 4,607,914, Cl. 350-320.000.

Filenet Corporation: *See—*
Rudy, Michael; Cary, Paul; and Roth, Arthur A., 4,608,679, Cl. 369-36.000.

Filippini, Lucio: *See—*
Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, 4,608,441, Cl. 562-466.000.

Filmakova, Lidia A.: *See—*
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

Filmakowa, Lidia A.: *See—*
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

Filtertek, Inc.: *See—*
Cain, Thomas A., 4,608,166, Cl. 210-232.000.

Finzer, Heinz; and Kessler, Wolfgang, to Heinz Finzer KG. Stamping and bending tool assembly. 4,607,517, Cl. 72-449.000.

Fiorentini, Carlo, to Afros S.p.A. Mixing method and apparatus for preparing multi-component plastic materials especially polyurethanes. 4,608,233, Cl. 422-133.000.

Firmenich SA: *See—*
Giersch, Wolfgang K.; Schulte-Elte, Karl H.; and Ohloff, Gunther, 4,608,445, Cl. 568-667.000.

Flanders Filters, Inc.: *See—*
Cadwell, George H., Jr., 4,608,066, Cl. 55-385.00A.

Flannery, Stephan W.: *See—*
Bendall, Brian; and Flannery, Stephan W., 4,607,788, Cl. 236-12.200.

Fleming, Christopher A., to Council for Mineral Technology. Regeneration of thiocyanate resins. 4,608,176, Cl. 210-677.000.

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Runge, Harry V., 4,608,282, Cl. 427-385.500.

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Focke, Heinz, 4,607,748, Cl. 206-254.000.

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Fokker B.V.: *See—*
De Haan, Frans W.; and Blackburn, John, 4,607,812, Cl. 244-129.500.

Force Control Industries, Inc.: *See—*
Kelley, Reginald D., 4,607,736, Cl. 192-18.00A.

Ford Aerospace & Communications Corporation: *See—*
Frazer, Alson C., 4,607,810, Cl. 244-329.000.

Ford, James; and Canfield, Douglas M., to Casso Solar Corporation. Roller conveyor for a glass furnace. 4,608,073, Cl. 65-163.000.

Ford Motor Company: *See—*
Stockton, Thomas R.; and Morris, Frederick J., 4,608,032, Cl. 474-28.000.

Foreman, James D. M.: *See—*
Whittlestone, Walter G.; Wenham, Douglas L.; and Foreman, James D. M., 4,607,596, Cl. 119-14.020.

Fossati, Piero, to Miles Italiana S.p.A. Enzymatic urea assay. 4,608,335, Cl. 435-12.000.

Foster, C. Tom. Portable illumination display sign. 4,607,444, Cl. 40-550.000.

Foster Wheeler Energy Corporation: *See—*
Seshamani, Venkatraman, 4,607,690, Cl. 165-145.000.

Four Seasons Solar Products Corporation: *See—*
Esposito, Christopher, 4,607,567, Cl. 98-42.120.

Fowler, Brooks C.: *See—*
White, Thomas E.; and Fowler, Brooks C., 4,608,647, Cl. 364-481.000.

Fowler, Stephen L.; and Brown, Allison T. Telecommunications device for the hearing impared. 4,608,457, Cl. 179-2.00A.

Fox, David A.; and Baker, Donal E., to Westinghouse Electric Corp. Electrical inverter with minority pole current limiting. 4,608,626, Cl. 363-56.000.

Fraige, Richard. Waterbed float with antiwave hanging baffle and collapse-retarding fiber insert. 4,607,404, Cl. 5-450.000.

Francis, John G. R. Saw guide with cut location indicator. 4,607,434, Cl. 33-42.000.

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Reck, Ralf; Broemer, Heinz; Deutscher, Klaus; and Franek, Henning, 4,608,051, Cl. 623-10.000.

Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Panthuvanich, Siriporn, to Ohio State University Research Foundation, The. Small particule formation and encapsulation. 4,608,278, Cl. 427-213.350.

Fraser, Gerald M.; and Champigny, Marcel J. Water level control device. 4,607,658, Cl. 137-393.000.

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Muller, Dietmar; and Schubert, Hiltmar, 4,608,210, Cl. 264-3.200.

Frazer, Alson C., to Ford Aerospace & Communications Corporation. Passive constraint for aerodynamic surfaces. 4,607,810, Cl. 244-329.000.

Freeman, Richard B., to Budd Company, The. Electro-magnetic interference shield. 4,608,453, Cl. 174-35.0MS.

Freiberg, Alan L., to Dow Corning Corporation. Silicone water-based elastomeric caulking material. 4,608,412, Cl. 524-724.000.

Fretwell, Donald W. Applicator for impressing brands or medicaments on animals. 4,608,045, Cl. 604-311.000.

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Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.

Friedman, Michael S.; Thomas, Kenneth D.; and Chan, Philip T., to Computer Automation, Inc. Local modulated carrier data network with a collision avoidance protocol. 4,608,559, Cl. 340-825.500.

Friesenhagen, Lothar: *See*—
Lepper, Herbert; and Friesenhagen, Lothar, 4,608,202, Cl. 260-410.90R.

Frimer, Itzchak. Firearm rest. 4,607,561, Cl. 89-37.040.

Fritch, Charles D.; and McAdams, John B., to Fritch, Charles D. Fiber optic ocular endoscope. 4,607,622, Cl. 128-6.000.

Frito-Lay, Inc.: *See*—
Fan, Lucy L.; and Arce, Javier A., 4,608,264, Cl. 426-438.000.

Frollini, Dominick, Jr.; Falconer, Dennis G.; and Kato, Kenneth J., to Allied Corporation. Combination pH/reference electrode with improved temperature response. 4,608,148, Cl. 204-408.000.

Fry, Emanuel D., to Tecumseh Products Company. Compressor mounted suction accumulator. 4,607,503, Cl. 62-503.000.

Fry Metals, Inc.: *See*—
DiMartini, Carl; and Lane, John, 4,608,230, Cl. 420-566.000.

Frye, John G., Jr.: *See*—
Mazanec, Terry J.; Goeden, Gary V.; and Frye, John G., Jr., 4,608,447, Cl. 568-902.000.

Fubini, Guido: *See*—
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Fuji Kiko Company, Limited: *See*—
Kinoshita, Satoshi; and Yamamoto, Yoshimi, 4,607,540, Cl. 74-493.000.

Fuji Oil Company, Ltd.: *See*—
Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, 4,608,203, Cl. 530-378.000.

Fuji Photo Film Co., Ltd.: *See*—
Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, 4,608,301, Cl. 428-328.000.
Miyake, Izumi, 4,608,613, Cl. 360-78.000.
Nakayama, Yoshiaki; and Inuiya, Masafumi, 4,608,595, Cl. 358-29.000.
Oishi, Kengo; and Ono, Tuyoshi, 4,608,617, Cl. 360-133.000.
Shuto, Sadanobu; Fujita, Munehisa; and Hasebe, Kazunori, 4,608,334, Cl. 430-505.000.
Umemura, Shizuo; and Kitamoto, Tatsuji, 4,608,093, Cl. 148-6.350.

Fujii, Isao; and Narasaka, Shin, to Honda Giken Kogyo Kabushiki Kaisha. Seal arrangement for vane type air pumps. 4,608,003, Cl. 418-137.000.

Fujii, Takabumi; and Iijima, Takashi, to Matsushita Electric Industrial Co., Ltd. Organic electrolyte cell. 4,608,324, Cl. 429-194.000.

Fujiki, Hirokazu: *See*—
Miyaji, Yoshimori; Fujiki, Hirokazu; and Takahashi, Fumio, 4,608,593, Cl. 358-10.000.

Fujimoto, Kiyokatsu; Shibuya, Kazunobu; and Urata, Tetsukazu, to Toyo Sanso Co., Ltd. Method of and apparatus for disintegrating lumps of boiled rice while cooling and freezing. 4,607,495, Cl. 62-63.000.

Fujimoto, Terunori: *See*—
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,608,130, Cl. 204-27.000.

Fujimura, Yoshiyuki: *See*—
Niwa, Kuniyuki; and Fujimura, Yoshiyuki, 4,608,645, Cl. 364-474.000.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Preparing a tertiary hydroxyl carboxaldehyde containing perfume composition. 4,608,195, Cl. 252-522.00R.

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Fujisawa Pharmaceutical Co., Ltd.: *See*—
Ueda, Ikuo; and Kato, Masayuki, 4,608,375, Cl. 514-218.000.

Fujita, Munehisa: *See*—
Shuto, Sadanobu; Fujita, Munehisa; and Hasebe, Kazunori, 4,608,334, Cl. 430-505.000.

Fujita, Tsuyoshi: *See*—
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, 4,608,316, Cl. 428-446.000.

Fujitsu Limited: *See*—
Murakami, Yoshishige; Inoue, Takeshi; and Tanaka, Atsushi, 4,608,598, Cl. 358-113.000.

Fujitsu Ten Limited: *See*—
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.

Fujiwara, Katsuyoshi: *See*—
Uchiyama, Hiroaki; Ibuchi, Yoshiaki; and Fujiwara, Katsuyoshi, 4,607,946, Cl. 355-14.00R.

Fukazawa, Yoshimitsu: *See*—
Sugimoto, Tamio; Fukazawa, Yoshimitsu; and Yamaguchi, Kunio, 4,608,001, Cl. 418-55.000.

Fukuda, Tatsuo; and Ikenaga, Akiyoshi, to Futaba Denshi Kogyo K. K. Color fluorescent luminous tube. 4,608,518, Cl. 313-481.000.

Fukuda, Teruo: *See*—
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.

Fukui, Kiyoshi, to New Cosmos Electric Co. Ltd. Hydrogen-selective sensor and manufacturing method therefor. 4,608,549, Cl. 338-34.000.

Fukumoto, Ryoichi: *See*—
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,607,456, Cl. 49-352.000.

Fukuroi, Takeo, to Nippon Notion Kogyo Co., Ltd. Button for garment. 4,607,415, Cl. 24-94.000.

Fukushima, Toshitaka, to Seiko Instruments & Electronics Ltd. Electronic sphygmomanometer. 4,607,641, Cl. 128-680.000.

Fukuta, Minoru: *See*—
Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, 4,608,657, Cl. 364-571.000.

Fukuyama, Masaru: *See*—
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Fukuzawa, Miyuki: *See*—
Yokokawa, Hidemi; and Fukuzawa, Miyuki, 4,608,652, Cl. 364-521.000.

Fullerton, Graeme D., to Ainsworth Nominees Pty. Ltd. Poker machine with improved security after power failure. 4,607,844, Cl. 273-143.00R.

Fulton, Cyrus B., Jr. Method and apparatus for stretch wrapping unstable loads. 4,607,476, Cl. 53-399.000.

Fumagalli, Marco: *See*—
Ghisalberti, Luigi; and Fumagalli, Marco, 4,608,158, Cl. 210-96.100.

Fumoto, Teruo: *See*—
Kaneko, Akira; Fumoto, Teruo; and Nishida, Jun, 4,608,599, Cl. 358-113.000.

Fundatech S.A.: *See*—
Spits, Marc, 4,607,630, Cl. 128-127.000.

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Fukuda, Tatsuo; and Ikenaga, Akiyoshi, 4,608,518, Cl. 313-481.000.

Fuzita, Yoshiharu: *See*—
Hirose, Nagayoshi; Kido, Sumiaki; and Fuzita, Yoshiharu, 4,608,488, Cl. 235-384.000.

Gabbay, Emile; and Plessis, Andre , to Thomson-CGR. Rotating anode X-ray tube provided with a charge flow device. 4,608,707, Cl. 378-132.000.

Gaddy, James L.; and Clausen, Edgar C. Method of separation of sugars and concentrated sulfuric acid. 4,608,245, Cl. 423-531.000.

Gaetani, Quintino: *See*—
Jacquet, Bernard; and Gaetani, Quintino, 4,608,392, Cl. 514-844.000.

Gala, Jeffrey A. Isometric exercise apparatus. 4,607,841, Cl. 272-125.000.

Gale, David M.; and Shin, Hyunkook, to Du Pont de Nemours, E. I., and Company. Cement matrix composites and method of making same. 4,608,089, Cl. 106-90.000.

Galileo Electro-Optics Corp.: *See*—
Tosswill, Christopher H., 4,608,519, Cl. 313-528.000.

Galland, Sherry A., to J. R. Simplot Company. Method of making frozen potato patties and the products formed thereby. 4,608,262, Cl. 426-243.000.

Gallo, William. Slide number identifiers. 4,607,845, Cl. 273-148.00R.

Galper, Sam, to Samdor Engineering Limited. Liquid surface skimming trough assembly. 4,608,165, Cl. 210-232.000.

Gambro Dialysatoren KG: *See*—
Goehl, Hermann J.; and Buck, Reinhold J., 4,608,172, Cl. 210-500.200.

Gantner, Phillip E. Hydronic room heating device. 4,607,791, Cl. 237-71.000.

Gardent, Maurice: *See*—
Karinthi, Pierre; Gardent, Maurice; Regnier, Colette; and Tuccella, Jean, 4,607,488, Cl. 62-45.000.

Gardner, Hugh C.; Brode, George L.; and Cotter, Robert J., to Union Carbide Corporation. Epoxy compositions containing oligomeric diamine hardeners and high strength composites therefrom. 4,608,404, Cl. 523-400.000.

Garr, Ernest J. Wrapping table assembly. 4,607,774, Cl. 225-47.000.

Gartner, Hartmut; Biber, Klaus; and Greve, Peter, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Manipulator for use with a surgical microscope. 4,607,919, Cl. 350-507.000.
Gass, Wanda K.: *See*—
Caudel, Edward R.; Magar, Surendar S.; and Gass, Wanda K., 4,608,634, Cl. 364-200.000.
Gastebled, Yves. Knockdown picnic table. 4,607,880, Cl. 297-157.000.
Gates, George: *See*—
Hancock, Dennis, 4,607,772, Cl. 224-30.00A.
Gateway Industries, Inc.: *See*—
Doty, Gerald A., 4,608,469, Cl. 200-61.58B.
Gaudiana, Russell A.: *See*—
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,608,429, Cl. 528-194.000.
Gay, Pierre. Line-type foliage trimmer with automatic feed. 4,607,431, Cl. 30-276.000.
Gaysert, Gerhard; and Gotz, Dieter, to Die Firma J. Eberspacher. Ultrasonic atomizing burner. 4,608,013, Cl. 431-1.000.
Geay, Jean C.: *See*—
Didier, Laurent; and Geay, Jean C., 4,607,408, Cl. 8-159.000.
Geisler, Thomas C., to Minnesota Mining and Manufacturing Company. Imageable toner powder. 4,608,329, Cl. 430-110.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Angular torque transmission mechanism. 4,607,538, Cl. 74-417.000.
Genco, Louis V.: *See*—
Task, Harry L.; and Genco, Louis V., 4,607,923, Cl. 351-239.000.
General Binding Corporation: *See*—
Scharer, Roger M., 4,607,993, Cl. 412-40.000.
General Electric Company: *See*—
Dickey, Frank R., Jr.; and Penn, William A., 4,608,569, Cl. 343-384.000.
Eckberg, Richard P.; Striker, Richard A.; and Modic, Frank J., 4,608,312, Cl. 428-419.000.
Fairbanks, Norman P., 4,608,145, Cl. 204-279.000.
Farmer, Edward R.; and Stillman, Allyn N., 4,608,128, Cl. 204-16.000.
Giles, Harold F., Jr.; and Hirt, Robert P., Jr., 4,608,311, Cl. 428-412.000.
Giles, Harold F., Jr., 4,608,417, Cl. 525-148.000.
Hale, Thomas E., 4,608,098, Cl. 148-6.300.
Hirschkron, Robert, 4,607,657, Cl. 137-15.100.
Mark, Victor; and Campbell, John R., 4,608,430, Cl. 528-196.000.
Stillwell, Billy E., 4,608,528, Cl. 320-2.000.
General Motors Corporation: *See*—
Bomer, Michael O.; and Chudoba, Richard F., 4,608,619, Cl. 361-31.000.
Eisenberg, Sidney W.; and Johnson, Gregory J., 4,607,861, Cl. 280-702.000.
Partin, Dale L., 4,608,694, Cl. 372-44.000.
Shelton, Alan J., 4,607,877, Cl. 296-191.000.
Vahabzadeh, Hamid, 4,608,031, Cl. 474-17.000.
General Services Engineering, Inc.: *See*—
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Hoffman, Gary R., 4,608,564, Cl. 340-870.020.
General Signal Corporation: *See*—
Turner, Michael D.; and Roch, Jacques, 4,607,525, Cl. 73-37.500.
Genco Inc.: *See*—
Czerwinski, Richard W.; and Osterberger, Larry D., 4,608,418, Cl. 524-296.000.
Georgopoulos, George, to Levolor Lorentzen, Inc. Installation bracket for venetian blind head rail. 4,607,818, Cl. 248-544.000.
GESTRA Aktiengesellschaft: *See*—
Wessels, Lur; and Tetzner, Johannes, 4,607,661, Cl. 137-512.100.
Gewerkschaft Eisenhutte Westfalia: *See*—
Merten, Gerhard; Steinkuhl, Bernd; and Hauschopp, Alois, 4,607,890, Cl. 299-43.000.
Ghedini, Luigi; Claudio, Rubbini; and Mauro, Grillini. Apparatus for cleaning in particular teeth. 4,608,018, Cl. 433-88.000.
Ghent, Hugh W.: *See*—
Cecco, Valentino; and Ghent, Hugh W., 4,608,534, Cl. 324-238.000.
Ghisalberti, Luigi; and Fumagalli, Marco, to Web Italia S.r.l. Feeding installation for the dampening solution in offset printing processes. 4,608,158, Cl. 210-96.100.
Gibson, Brent William: *See*—
Courtman, Murray G., 4,607,756, Cl. 215-6.000.
Gibson, Carroll A., to Texfi Industries, Inc. Apparatus for severing inserted filling yarns. 4,607,667, Cl. 139-429.000.
Gibson, Colin F.: *See*—
Bottomore, David; and Gibson, Colin F., 4,607,566, Cl. 98-37.000.
Gibson, James D. M., to Wool Development International Ltd. Fluid dispensing apparatus. 4,607,589, Cl. 118-201.000.
Giebeler, Robert H., Jr.: *See*—
Wright, Herschel E.; Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., 4,607,551, Cl. 83-54.000.
Giersch, Wolfgang K.; Schulte-Elte, Karl H.; and Ohloff, Gunther, to Firmenich SA. Oxygenated alicyclic compounds. 4,608,445, Cl. 568-667.000.
Giesen, Brigitte: *See*—
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Giles, Harold F., Jr.; and Hirt, Robert P., Jr., to General Electric Company. Multilayer polycarbonate structures. 4,608,311, Cl. 428-412.000.
Giles, Harold F., Jr., to General Electric Company. Compositions comprising olefin polymer blends. 4,608,417, Cl. 525-148.000.
Gilligan, Thomas J., III: *See*—
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.
Gillman, Hyman D.: *See*—
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Gingerich, Richard G. W.: *See*—
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., 4,608,235, Cl. 423-53.000.
Ginos, James Z.; and Cotzias, George C., to Cornell Research Foundation Inc. Catecholamine derivatives, a process for their preparation and pharmaceutical compositions thereof. 4,608,391, Cl. 514-654.000.
Girard Transmissions: *See*—
Stevens, Georges, 4,608,033, Cl. 474-39.000.
Giroux, Gilles. Rubber band slitting machine. 4,607,558, Cl. 83-879.000.
Gladden, Ernest L.: *See*—
Thureson, Gary R.; and Gladden, Ernest L., 4,607,573, Cl. 102-275.800.
Gladon, Richard J.; and Koranski, David S., to Iowa State University Research Foundation, Inc. Aminooxyacetic acid (AOA) as a plant growth inhibitor. 4,608,076, Cl. 71-76.000.
Glavnoe Spetsializirovannoe Konstruktorskoe Bjuro po Mashinam Uborki Zernovykh Kultur i Samokhodnykh Shassi: *See*—
Yarmashev, Jury N.; Zapandi, Vladimir A.; and Tkachev, Valentin N., 4,607,480, Cl. 130-27.00T.
Gleason, Curtis A.: *See*—
Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., 4,607,639, Cl. 128-419.00E.
Glennon, Timothy F.; and Vaidya, Jayant G., to Sundstrand Corporation. Phase advance waveform generator for brushless DC actuator system controller. 4,608,527, Cl. 318-685.000.
Glidevale Building & Products Limited: *See*—
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Glory Kogyo Kabushiki Kaisha: *See*—
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Mazanec, Terry J.; Goeden, Gary V.; and Frye, John G., Jr., 4,608,447, Cl. 568-902.000.
Goehl, Hermann J.; and Buck, Reinhold J., to Gambro Dialysatoren KG. Plasmapheresis membrane and process for the preparation thereof. 4,608,172, Cl. 210-500.200.
Goldberg Brothers, Inc.: *See*—
Urlik, Randall G., 4,607,804, Cl. 242-67.400.
Golden, Ronald: *See*—
Williams, Paul R., Jr.; Burt, Russell V.; and Golden, Ronald, 4,608,406, Cl. 523-424.000.
Goldman, Stuart O., to ITT Corporation. Cellular mobile radio handoff utilizing voice channel. 4,608,711, Cl. 455-33.000.
Goldstein, Arthur L., to Ionics, Incorporated. Electrodialysis apparatus and process. 4,608,140, Cl. 204-182.300.
Goll, John D., to Celotex Corporation, The. Wet-end molding method and molded product. 4,608,108, Cl. 156-219.000.
Gomi, Manabu; and Abe, Masanori, to Nippon Sheet Glass Co., Ltd. Method of manufacturing magneto-optic recording film. 4,608,142, Cl. 204-192.00M.
Gonczy, Stephen T.; Lawson, Randy J.; and Rosen, Bruce I., to Allied Corporation. Preparation of ceramics. 4,608,215, Cl. 264-56.000.
Gonpei, Katsuhiro: *See*—
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Gonser, Donald I., to Dentsply Research & Development Corp. Multifunction light source. 4,608,622, Cl. 362-32.000.
Goodboy, Kenneth P., to Aluminum Company of America. Activated alumina Claus catalyst having increased sodium oxide content. 4,608,363, Cl. 502-330.000.
Goodfellow, Glenn B., to UTI Corporation. Kinetic energy penetrator. 4,607,515, Cl. 72-358.000.
Goodin, John W.: *See*—
Bluem, Gary R.; Goodin, John W.; and Hickey, Larry G., 4,607,455, Cl. 49-55.000.
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Goodman, Steven. Assembly for utilizing bilge pump as power water jet. 4,607,400, Cl. 4-541.000.
Goodrich, Jerry L.; and Devlin, William L., to Programmable Orienting Systems, Inc. Programmable parts feeder. 4,608,646, Cl. 364-478.000.
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., to Conoco Inc. Method for determining phenol using a simple distillation apparatus. 4,608,346, Cl. 436-131.000.
Goodwin, Kenneth J.: *See*—
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Goodyear Tire & Rubber Company, The: *See*—
Patitsas, George P.; and Kagarise, Herbert N., 4,607,675, Cl. 152-521.000.
Gordon, William E., to Wolsten's Computer Devices, Inc. Computer network for using a common peripheral device. 4,608,663, Cl. 364-900.000.
Goschke, Richard: *See*—
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Goth, George R.; Magdo, Ingrid E.; and Malaviya, Shashi D., to International Business Machines Corporation. Self-aligned metal structure for integrated circuits. 4,608,589, Cl. 357-34.000.

Gotz, Dieter: *See—*
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Gove, Gene G. Method for making a counter top and product of same. 4,608,291, Cl. 428-119.000.

Graber, Werner: *See—*
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Graffenberger, Wilhelm: *See—*
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Grainware Company: *See—*
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Grand Slam Archery: *See—*
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Grantham-Hill, Timothy R., to U.S. Philips Corporation. Circuit for generating a control signal for the field deflection in a picture display device. 4,608,602, Cl. 358-148.000.

Grasso, Lawrence J.: *See—*
Chang, Yihua E.; Grasso, Lawrence J.; Gruodis, Algirdas J.; and Morgan, Carroll E., 4,608,706, Cl. 377-39.000.

Grau, Ulrich, to Hoechst Aktiengesellschaft. Pharmaceutical agent for the treatment of diabetes mellitus. 4,608,364, Cl. 514-4.000.

Graves, Jan D., to Norwalk Wastewater Equipment Company. Wastewater treatment plant. 4,608,157, Cl. 210-86.000.

Grays, Gwendolyn M.: *See—*
Hickner, Richard A.; Owens, Kevin A.; and Grays, Gwendolyn M., 4,608,313, Cl. 428-414.000.

Greb, Wolfgang: *See—*
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.

Greene, Roger: *See—*
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, 4,608,193, Cl. 252-522.00R.

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Klamer, Reuben B.; and Greenwood, Donald, 4,608,027, Cl. 446-457.000.

Greiner, Ulrich; Keil, Karl-Heinz; Heinrich, Rudolf; and Albrecht, Konrad, to Casella Aktiengesellschaft. Encapsulated salts of sparing solubility in water, their preparation and their use. 4,608,277, Cl. 427-213.300.

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Castellarin, Silvano, 4,607,930, Cl. 354-322.000.

Greve, Peter: *See—*
Gartner, Hartmut; Biber, Klaus; and Greve, Peter, 4,607,919, Cl. 350-507.000.

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Grobner, Paul J.: *See—*
Davison, Ralph M.; and Grobner, Paul J., 4,608,099, Cl. 148-37.000.

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Kukanskis, Peter E.; Grunwald, John J.; and Sawoska, David, 4,608,275, Cl. 427-98.000.

Gruodis, Algirdas J.: *See—*
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GTE Laboratories Incorporated: *See—*
Avella, Frank J.; and Bowen, Leslie J., 4,608,354, Cl. 501-97.000.
Fallier, Charles N., Jr.; and Proud, Joseph M., 4,608,521, Cl. 315-47.000.
Sanford, Norman A.; Miniscalco, William J.; and Lempicki, Alexander, 4,607,916, Cl. 350-376.000.
Su, Sophia R., 4,608,192, Cl. 252-506.000.

GTE Products Corporation: *See—*
Blaisdell, Ronald G.; and Hough, Harold L., 4,608,624, Cl. 362-226.000.
Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., 4,608,084, Cl. 75-101.00R.
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., 4,608,235, Cl. 423-53.000.

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Juengel, Richard O., 4,608,714, Cl. 455-603.000.

Guilarte, Walter: *See—*
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

Gullfiber AB: *See—*
Csiki, Kalman, 4,608,217, Cl. 264-249.000.

Gundersen, Dag H. Z., to Vetco Offshoe Industries, Inc. Tree control manifold. 4,607,701, Cl. 166-368.000.

Guscott, John K., to American District Telegraph Company. Constant range ultrasonic motion detector. 4,608,674, Cl. 367-93.000.

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Jacobs, Aaron R.; and Gustafson, John W., 4,608,536, Cl. 324-399.000.

GX-Holding AG: *See—*
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Gyongyossy, Lajos: *See—*
Keresztessy nee Badi, Maria; Paka nee Kas, Eleonora; Gyongyossy, Lajos; Farkas, Bela; and Paku, Sandor, 4,608,090, Cl. 106-272.000.

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Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,608,111, Cl. 156-306.600.

H. Lundbeck A/S: *See—*
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.

Haferli, Hans: *See—*
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Hafke, Carl: *See—*
Kupfer, Hans; and Hafke, Carl, 4,608,059, Cl. 48-197.00R.

Hafner, Otto P. Means for interlocking overlapping sheet material. 4,607,418, Cl. 29-21.100.

Haga, Toru; Nagano, Eiki; Sato, Ryo; and Yoshida, Ryo, to Sumitomo Chemical Company, Limited. Herbicidal 2-phenyl-4,5,6,7-tetrahydro-2H-indazoles. 4,608,080, Cl. 71-92.000.

Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, to Daiho Construction Co., Ltd. Shield tunnel boring machine. 4,607,889, Cl. 299-33.000.

Hagio, Tsuyoshi: *See—*
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

Hagiwara, Michiaki: *See—*
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Haines, Richard K., to Elkhart Door Corporation. Window blind fittings. 4,607,816, Cl. 248-208.000.

Hakamada, Haruo; Amano, Tadashi; and Kamiyama, Hiromitsu, to Konishiroku Photo Industry Co., Ltd. Photographic print making method. 4,607,949, Cl. 355-40.000.

Halcon SD Group, Inc., The: *See—*
Jacobson, Stephen E., 4,608,444, Cl. 568-462.000.

Hale, Thomas E., to General Electric Co. Coated product and process. 4,608,098, Cl. 148-6.300.

Hall, Steven E.; and Han, Wen-Ching, to E. R. Squibb & Sons, Inc. 7-oxabicycloheptane ethers useful in the treatment of thrombotic diseases. 4,608,386, Cl. 514-469.000.

Halliburton Company: *See—*
Beals, Richard A., 4,608,636, Cl. 364-422.000.

Hama, Tomio; and Yamazaki, Kiyoyasu, to Nihon Pisuko Kabushiki Kaisha. Three-way change-over valve. 4,607,662, Cl. 137-625.650.

Hamabe, Yoshifumi: *See—*
Ueno, Hideo; Kuno, Hiroshi; and Hamabe, Yoshifumi, 4,607,966, Cl. 400-63.000.

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Hamano, Toshikatsu, to Asahi Glass Company Ltd. Process for producing an ion exchange membrane using irradiation by ionizing radiation followed by thermal polymerization. 4,608,393, Cl. 521-27.000.

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Hamner, Glen P.: *See—*
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Han, Wen-Ching: *See—*
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Hanada, Tatsuo: *See—*
Kamigaichi, Hideyuki; Kurachi, Kazuto; Asano, Nobuyoshi; and Hanada, Tatsuo, 4,607,925, Cl. 354-63.000.

Hancock, Dennis, to Gates, George; and Hancock, Dennis. Rifle carrier for motorcycle. 4,607,772, Cl. 224-30.00A.

Hancovsky, John P., to Matthews International Corporation. Storage system for cremated remains. 4,607,417, Cl. 27-1.000.

Handa, Ryoji: *See—*
Ohshima, Iwao; Narita, Takeshi; Handa, Ryoji; and Hosoda, Jun, 4,607,958, Cl. 366-192.000.

Handjani, Rose-Marie; Ribier, Alain; and Maurelli, Manlio M., to L'Oreal. Process for preparing lipid vesicles by vaporisation of solvents. 4,608,211, Cl. 264-4.600.

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Haneda, Yoshiaki: *See—*
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Hanger Hole Punches, Inc.: *See—*
Hartzell, John C., 4,607,553, Cl. 83-164.000.

Hankes, Robert W.; and Parker, Lloyd H., to Crane Co. Rotating biological contactor apparatus. 4,608,162, Cl. 210-150.000.

Hanna, Marie: *See—*
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, 4,608,193, Cl. 252-522.00R.

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Wiese, Hans-Holger, 4,607,745, Cl. 198-706.000.

Hans, Rudiger; and Kotzab, Werner, to SKF Kugellagerfabriken GmbH. Hydraulically operating release arrangement, especially for a vehicle clutch. 4,607,737, Cl. 192-88.00A.

Hansen-BTR GmbH: *See*—
Neu, Werner, 4,608,164, Cl. 210-231.000.

Hansen, Robert C.; Richardson, Calvin J.; and Schmitt, David A., to AT&T Bell Laboratories. Processing system tolerant of loss of access to secondary storage. 4,608,688, Cl. 371-11.000.

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Hara, Ryuichiro: *See*—
Shibanuma, Tadao; Nakano, Kohji; Nagano, Noriaki; Murakami, Yukiyasu; and Hara, Ryuichiro, 4,608,373, Cl. 514-202.000.

Hara, Seiji: *See*—
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Hara, Yasuhiko: *See*—
Kobayashi, Mamoru; Sasaki, Hideaki; and Hara, Yasuhiko, 4,608,494, Cl. 250-461.100.

Harada, Hiraku: *See*—
Wakayama, Katsuhiko; and Harada, Hiraku, 4,608,186, Cl. 252-62.520.

Harada, Kunihiko, to Achilles Corporation. Laminated sheet and a method for producing the same. 4,607,439, Cl. 36-45.000.

Harada, Yuji, to Canon Kabushiki Kaisha. Keyboard. 4,608,465, Cl. 200-5.00A.

Hardt, Heinz, to Viennatone Gesellschaft m.b.H. Hearing aid. 4,607,720, Cl. 181-135.000.

Harper, James J. Weight training device. 4,607,840, Cl. 272-117.000.

Harris Corporation: *See*—
Bacrania, Kanti, 4,608,530, Cl. 323-315.000.
Johnson, Brion, 4,608,603, Cl. 358-183.000.

Harris, Curtis C.: *See*—
Yoakum, George H.; Harris, Curtis C.; Korba, Brent E.; and Lechner, John F., 4,608,339, Cl. 435-172.200.

Harris, Haynie: *See*—
Arnold, Richard N.; and Harris, Haynie, 4,608,483, Cl. 219-201.000.

Harrison, George W., to Team, Inc. Seal for water proofing a utility line conduit and a method of forming the seal. 4,607,469, Cl. 52-220.000.

Hartman, Adrian R.; Riley, Terence J.; and Shackle, Peter W., to AT&T Bell Laboratories. High voltage dielectrically isolated solid-state switch. 4,608,590, Cl. 357-38.000.

Hartmann, Max; and Rollier, Michel, to BBC Brown, Boveri & Company, Limited. Shaft coupling. 4,607,971, Cl. 403-2.000.

Hartzell, John C., to Hanger Hole Punches, Inc. Self-clearing punch with removable blade. 4,607,553, Cl. 83-164.000.

Harvey, Phillip R. Pulverizing mill. 4,607,801, Cl. 241-199.100.

Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., to Baxter Travenol Laboratories, Inc. Universal connector. 4,607,868, Cl. 285-332.000.

Hasebe, Kazunori: *See*—
Shuto, Sadanobu; Fujita, Munehisa; and Hasebe, Kazunori, 4,608,334, Cl. 430-505.000.

Hasebe, Kouki, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing system with condition data setting function. 4,608,660, Cl. 364-768.000.

Hasegawa, Hitoshi: *See*—
Hayashi, Keizo; and Hasegawa, Hitoshi, 4,608,005, Cl. 425-192.00R.

Hasegawa, Takahito; and Adachi, Hideo, to Taiyo Pharmaceutical Industry Co., Ltd. Oral cyclodextrin and mobenzoxamine preparation. 4,608,366, Cl. 514-58.000.

Hasegawa, Takashi: *See*—
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Hashimoto Corporation: *See*—
Hashimoto, Kazuo, 4,608,458, Cl. 179-2.00A.

Hashimoto, Kazuo, to Hashimoto Corporation. Automatic telephone answering apparatus. 4,608,458, Cl. 179-2.00A.

Hashimoto, Shinichi: *See*—
Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, 4,607,945, Cl. 355-14.00R.

Haskel, Inc.: *See*—
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Hatakoshi, Makoto: *See*—
Kisida, Hirosi; Hatakoshi, Makoto; and Nishida, Sumio, 4,608,389, Cl. 514-539.000.

Hauni-Werke Korber & Co. KG: *See*—
Janutta, Reinhard; Uhlig, Uwe; and Redeker, Werner, 4,607,607, Cl. 125-11.0CD.
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Hauschopp, Alois: *See*—
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Hauser, Hans-Ulrich, to Bucher-Guyer AG Maschinenfabrik. Compression extractor. 4,607,570, Cl. 100-116.000.

Hawkes, Graham S., to Deep Ocean Engineering Incorporated. Electromechanical manipulator assembly. 4,607,998, Cl. 414-735.000.

Hayafuji, Yoshinori, to Sony Corporation. Faraday cup. 4,608,493, Cl. 250-397.000.

Hayase, Isao; and Kishi, Atsuo, to Hitachi, Ltd. Rotary vane compressor with hook-like suction passage. 4,608,002, Cl. 418-86.000.

Hayashi, Keizo; and Hasegawa, Hitoshi, to Toyoda Gosei Co., Ltd. Clamping device. 4,608,005, Cl. 425-192.00R.

Haybuster Manufacturing, Inc.: *See*—
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Hedler, Robert C.; Kohler, Robert D.; and Dunlap, John H., to Owens-Illinois, Inc. Method and apparatus for gauging containers. 4,608,709, Cl. 382-1.000.

Heerema Engineering Service BV: *See*—
Meek, Jan; Uittenbogaard, Maurice; and Michelsen, Finn C., 4,607,983, Cl. 405-204.000.

Hehl, Karl. Parts discharge conveyor for injection molding machine. 4,608,008, Cl. 425-542.000.

Heilweil, Israel J.: *See*—
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Heinig, Charles F., Jr., to LeMire, George J., a part interest. Composition for bactericidal treatment of water. 4,608,247, Cl. 424-16.000.

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Helgesson, Alan L.: *See*—
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Heling, Dennis H., to Chrysler Corporation. Vehicle easy entry seat latching mechanism. 4,607,884, Cl. 297-341.000.

Heller, Jerrold A.: *See*—
Paik, Woo H.; Heller, Jerrold A.; and Walker, Gordon K., 4,608,456, Cl. 179-1.50S.

Heller, John P.; and Dandge, Dileep K., to New Mexico Tech. Research Foundation. Topical viscosity control for light hydrocarbon displacing fluids in petroleum recovery and in fracturing fluids for well stimulation. 4,607,696, Cl. 166-275.000.

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Helm, John R.: *See*—
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Hemphill, Brian W.: *See*—
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Henkel Kommanditgesellschaft auf Aktien: *See*—
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.
Koch, Karlheinz; Wegener, Ingo; and Giesen, Brigitte, 4,608,189, Cl. 252-174.220.
Lepper, Herbert; and Friesenhagen, Lothar, 4,608,202, Cl. 260-410.90R.

Hennick, Donald C. Detachable joint for modular furniture. 4,607,972, Cl. 403-8.000.

Hercules Incorporated: *See*—
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Hermann Berstorff Maschinenbau GmbH: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

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Hermanson, Terry. Collapsible umbrella with circular rim. 4,607,653, Cl. 135-20.00M.

Herner, Peter L. Snow removing device. 4,607,872, Cl. 294-54.500.

Herrli AG: *See*—
Salm, Franz; Zangerle, Eduard; and Muriset, Jean-Fracois, 4,607,988, Cl. 407-114.000.

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Hesterberg, Detlef; and Hesterberg, Dietrich, 4,607,895, Cl. 312-126.000.

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Neukermans, Armand P.; Chiang, Kuo L.; Schwettmann, Frederic N.; and Bradbury, Donald R., 4,608,326, Cl. 430-5.000.

Hewson, Carl: *See*—
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Heyden, Eugene L. Apparatus for intubation. 4,607,635, Cl. 128-207.150.

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Bluem, Gary R.; Goodin, John W.; and Hickey, Larry G., 4,607,455, Cl. 49-55.000.

Hickner, Richard A.; Owens, Kevin A.; and Grays, Gwendolyn M., to Dow Chemical Company, The. Advanced epoxy resins crosslinked with polyisocyanates. 4,608,313, Cl. 428-414.000.

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Briolle, Emile; Hicter, Jean-Marie; and Mateos, Adolfo, 4,507,825, Cl. 266-215.000.

Hieber, Konrad; Stolz, Manfred; and Wieczorek, Claudia, to Siemens Aktiengesellschaft. Method for the manufacture of metal silicide layers by means of reduced pressure gas phase deposition. 4,608,271, Cl. 427-38.000.

Higashi, Masato: *See*—
Ishii, Kenjiro; Aragaki, Masaharu; Kato, Osami; and Higashi, Masato, 4,607,950, Cl. 355-41.000.
Higashiguchi, Teruaki: *See*—
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Higashino, Toshihiro; Mitsunaga, Hirofumi; Nakanishi, Takahiro; and Taya, Yoshihiro, to Kuraco Limited. Grease extractor. 4,607,614, Cl. 126-299.00E.
Higuchi, Kazuo: *See*—
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Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.
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Hill, George R.; and Jordan, Larry C., to Jim Walter Resources, Inc. Extensible line brattice. 4,607,568, Cl. 98-50.000.
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Busot, J. Carlos; and Hill, Peter W., 4,607,595, Cl. 119-2.000.
Hillberg, Julian T. Safety apparatus for roofers. 4,607,724, Cl. 182-3.000.
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Hinchcliffe, Dennis; Labbe, Francis A. M.; and Molins, Desmond W., to Molins PLC. Cigarette packing machines. 4,607,477, Cl. 53-444.000.
Hines, George, to Westinghouse Electric Corp. Magnetic sensor for armature and stator. 4,608,620, Cl. 361-154.000.
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Ohbayashi, Gentaro; Umemoto, Susumu; and Hiramoto, Hiroo, 4,608,333, Cl. 430-281.000.
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Hirschkron, Robert, to General Electric Company. Aircraft engine inlet. 4,607,657, Cl. 137-15.100.
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Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.
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Hayase, Isao; and Kishi, Atsuo, 4,608,002, Cl. 418-86.000.
Kobayashi, Mamoru; Sasaki, Hideaki; and Hara, Yasuhiko, 4,608,494, Cl. 250-461.100.
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 4,608,525, Cl. 318-568.000.
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.
Nagayama, Hiroshi, 4,608,353, Cl. 501-97.000.
Nishizawa, Shigeki; and Izawa, Tetsurou, 4,608,608, Cl. 358-213.000.
Oki, Hiroshi, 4,608,516, Cl. 313-477.00R.
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Sunano, Naomasa; and Asahi, Naotatsu, 4,608,232, Cl. 422-88.000.
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, 4,608,316, Cl. 428-446.000.
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.
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Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.
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Van Kampen, Craig L.; and Hockert, Eric N., 4,608,052, Cl. 623-22.000.
Hodges, William D., to Machines Chambon S.A. Stacking and collecting apparatus. 4,607,995, Cl. 414-46.000.
Hoechst Aktiengesellschaft: *See*—
Brenk, Michael, 4,608,131, Cl. 204-33.000.
Brindopke, Gerhard; and Johannes, Gerhard, 4,608,420, Cl. 525-375.000.
Drum, Henner, 4,608,295, Cl. 428-202.000.
Grau, Ulrich, 4,608,364, Cl. 514-4.000.
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Effland, Richard C.; Davis, Larry; and Kapples, Kevin J., 4,608,374, Cl. 514-211.000.
Hoeft, Werner H. Analog to digital flash converter. 4,608,555, Cl. 340-347.0AD.
Hoffman Controls Corporation: *See*—
Bowman, William W., 4,607,789, Cl. 236-49.000.
Hoffman, Gary R., to General Services Engineering, Inc. Remote monitoring induction telemetering system. 4,608,563, Cl. 340-870.020.
Hoffman, Gary R., to General Services Engineering, Inc. Apparatus for the remote monitoring of meters and other devices. 4,608,564, Cl. 340-870.020.
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Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, 4,608,372, Cl. 514-187.000.
Hofmann, Hans: *See*—
Meyer, Albert; Hofmann, Hans; and Haferli, Hans, 4,607,563, Cl. 89-132.000.
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Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,608,664, Cl. 364-900.000.
Hogman, Claes F.: *See*—
Johansson, Anne S.; and Hogman, Claes F., 4,608,178, Cl. 210-744.000.
Hoh, Joseph C., to United States of America, Energy. Accordian-folded boot shield for flexible swivel connection. 4,607,852, Cl. 277-1.000.
Holecek, Allen R.: *See*—
Breitenstein, Charles T.; and Holecek, Allen R., 4,608,643, Cl. 364-474.000.
Holland, Larry L.: *See*—
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.
Hollandse Signaalapparaten B.V.: *See*—
Burgers, Bernhardus W. A.; and Razenberg, Adrianus Johannes P. T., 4,608,701, Cl. 375-1.000.
Hollingshaus, John G.: *See*—
Mallipudi, Narayana M.; and Hollingshaus, John G., 4,608,371, Cl. 514-186.000.
Holmes, Samuel J.: *See*—
Rowe, James M.; Kraatz, Paul; and Holmes, Samuel J., 4,608,272, Cl. 427-53.100.
Holmstrom, Sven A.; and Johansson, Leif, to Boliden Aktiebolag. Method for recovering the valuable metal content of contaminated copper raw material. 4,608,083, Cl. 75-83.000.
Holt, James F., to United States of America, Air Force. Non-dissipative current distribution circuit for magnetohydrodynamic generator electrodes. 4,608,627, Cl. 363-131.000.
Holtrop, James S.; and Maurer, Richard P., to Monsanto Company. Method of making a thermoformable laminate structure. 4,608,104, Cl. 156-78.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Fujii, Isao; and Narasaka, Shin, 4,608,003, Cl. 418-137.000.
Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, 4,607,903, Cl. 339-63.00R.
Itoh, Takanobu, 4,607,878, Cl. 296-199.000.
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.
Nagataki, Motoi; and Inagaki, Takashi, 4,607,718, Cl. 180-226.000.
Honda, Haruhisa, to Canon Kabushiki Kaisha. Process unit and image forming apparatus using such unit. 4,607,941, Cl. 355-3.00R.
Honeywell Inc.: *See*—
Roberts, Peter C. T.; and Vu, Tho T., 4,608,672, Cl. 365-230.000.
Honeywell Information Systems Inc.: *See*—
Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., 4,608,633, Cl. 364-200.000.
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.
Honeywell Information Systems Italia: *See*—
Collina, Giancarlo, 4,607,969, Cl. 400-642.000.
Honma, Yoshiaki, to Tokyo Juki Industrial Co., Ltd. Tape marking and cutting apparatus. 4,607,587, Cl. 118-37.000.
Honshu Paper Mfg. Co., Ltd.: *See*—
Kanamori, Nobutaka; and Kurosawa, Masaji, 4,608,361, Cl. 502-232.000.

Hood, Richard T.; and Bender, Raymond L., to Koppers Company, Inc. Phenol-HCHO-resorcinol resins for use in forming fast curing wood laminating adhesives. 4,608,408, Cl. 524-15.000.

Hoover Universal, Inc.: *See—*
Vail, Curtis F., 4,607,887, Cl. 297-452.000.

Hopkins, Graham K. Leaf excluder for rain water guttering. 4,607,465, Cl. 52-12.000.

Hori, Kenichi, to Elm Co., Ltd. Ink-belt bubble propulsion printer. 4,608,577, Cl. 346-140.00R.

Horiuchi, Hideyuki: *See—*
Nakamura, Keiichi; and Horiuchi, Hideyuki, 4,608,459, Cl. 179-6.030.

Horvath, Stephen J.: *See—*
Sherman, William, III; Larkin, Francis C.; and Horvath, Stephen J., 4,608,704, Cl. 377-8.000.

Horwood, Norman. Control of jets of liquid. 4,607,794, Cl. 239-455.000.

Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, to Japan Aviation Electronics Industry Limited; and Honda Giken Kogyo Kabushiki Kaisha. Connector assembly. 4,607,903, Cl. 339-63.00R.

Hosino, Syouji: *See—*
Yokokawa, Kiyoshi; Koya, Kazuo; and Hosino, Syouji, 4,608,071, Cl. 65-13.000.

Hosoda, Jun: *See—*
Ohshima, Iwao; Narita, Takeshi; Handa, Ryoji; and Hosoda, Jun, 4,607,958, Cl. 366-192.000.

Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, to Canon Kabushiki Kaisha. Method and apparatus for forming a thin layer of developer. 4,607,938, Cl. 355-3.0DD.

Houdaille Industries, Inc.: *See—*
Jansen, George A., 4,607,867, Cl. 285-242.000.

Hough, Harold L.: *See—*
Blaisdell, Ronald G.; and Hough, Harold L., 4,608,624, Cl. 362-226.000.

Hough, Wilfred H., to Nottingham-Spirk Design Inc. Coin bank with flipping action and sorting. 4,607,648, Cl. 133-3.00D.

Houston Industries, Incorporated: *See—*
Menger, William M., 4,608,058, Cl. 48-73.000.

Howard, Edward G., Jr., to Du Pont de Nemours, E. I., and Company. Precursor solutions for biologically active glass. 4,608,350, Cl. 501-20.000.

Howard, Edward G., Jr.: *See—*
England, David C.; and Howard, Edward G., Jr., 4,608,206, Cl. 260-544.00F.

Howard, William G.; and Berberick, David R., to Medtronic, Inc. Nonaqueous electrochemical cell. 4,608,322, Cl. 429-105.000.

Howell, Frederick H., to Ciba-Geigy AG. Benzo-1,4-quinones. 4,608,435, Cl. 544-87.000.

Howell, Jerald A.; and Kukes, Simon G., to Phillips Petroleum Company. Hydrovisbreaking process for hydrocarbon containing feed streams. 4,608,152, Cl. 208-108.000.

Hsieh, Jih-Han, to Celanese Corporation. Process for bioconversion-product recovery. 4,608,338, Cl. 435-142.000.

Hsiung, Andrew K.; Eaton, George F.; and Hemphill, Brian W., to Neptune Microfloc, Inc. Water filtration apparatus having upflow buoyant media filter and downflow nonbuoyant media filter. 4,608,181, Cl. 210-786.000.

Huber, Iren: *See—*
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Hudson, Carl W.; and Hamner, Glen P., to Exxon Research and Engineering Co. Process for the removal of polynuclear aromatic hydrocarbon compounds from admixtures of liquid hydrocarbon compounds. 4,608,153, Cl. 208-112.000.

Hufford, Diane K., to United States of America, Air Force. Mask aligner for solar cell fabrication. 4,608,112, Cl. 156-345.000.

Hughes, David W., to Vetco Offshore Industries, Inc. Connector, ratcheting type. 4,607,865, Cl. 285-18.000.

Hughes, Joel, to Container Products Corporation. Contaminated air/-water recovery apparatus. 4,608,062, Cl. 55-186.000.

Hullen, Helmut: *See—*
Knoth, Werner-Dieter; Hullen, Helmut; and Kopatz, Klaus, 4,608,074, Cl. 65-164.000.

Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., to H. B. Fuller Company. Bonding method employing an adhesive which contains in an aqueous base an effective amount of a polyvinyl alcohol and a lignin sulfonate. 4,608,111, Cl. 156-306.600.

Humphrey Instruments Incorporated: *See—*
Humphrey, William E., 4,607,922, Cl. 351-208.000.

Humphrey, William E., to Humphrey Instruments Incorporated. Method for aligning an eye examination instrument with the eye under examination. 4,607,922, Cl. 351-208.000.

Hutchinson: *See—*
Bodin, Francois; Jouade , Pierre; and Le Guillant, Daniel, 4,607,828, Cl. 267-140.100.

Hylerstedt, Erik: *See—*
Nordqvist, Percy; and Hylerstedt, Erik, 4,608,044, Cl. 604-290.000.

Hylsa, S.A.: *See—*
Villarreal-Trevino, Juan A.; Zendejas-Martinez, Eugenio; and Lopez-Ramos, Hector, 4,608,240, Cl. 423-230.000.

Hyslop, Adin E.: *See—*
Duvvury, Charvaka; and Hyslop, Adin E., 4,608,670, Cl. 365-205.000.

Ibar, Jean P.; and Saffell, John R., to Solomat S.A. Multi-probe metering apparatus. 4,608,532, Cl. 324-73.00R.

Ibuchi, Yoshiaki: *See—*
Uchiyama, Hiroaki; Ibuchi, Yoshiaki; and Fujiwara, Katsuyoshi, 4,607,946, Cl. 355-14.00R.

Ichida, Toshio: *See—*
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, 4,608,320, Cl. 428-629.000.

Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, to Kabushiki Kaisha Toshiba. Image forming apparatus. 4,607,945, Cl. 355-14.00R.

Ideal Security Inc.: *See—*
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, 4,607,510, Cl. 70-95.000.

Idemitsu Kosan Company Limited: *See—*
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.

IDN Inventions & Development of Novelties AG: *See—*
Ackeret, Peter, 4,607,894, Cl. 312-15.000.

Igarashi, Masami; Kato, Yoshinori; and Kamijo, Yoshimi, to Alps Electric Co., Ltd. Dispersive type electroluminescent device and method for manufacturing same. 4,608,308, Cl. 428-408.000.

Ihara, Hirokazu: *See—*
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 4,608,525, Cl. 318-568.000.

Iijima, Takashi: *See—*
Fujii, Takabumi; and Iijima, Takashi, 4,608,324, Cl. 429-194.000.

Iimori, Isao: *See—*
Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, 4,607,903, Cl. 339-63.00R.

Ijuin, Yasuharu: *See—*
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Ikari, Kyoichiro: *See—*
Motoishi, Yasuo; Satoh, Kenji; and Ikari, Kyoichiro, 4,608,286, Cl. 428-35.000.

Ikeda Bussan Co., Ltd.: *See—*
Kurumizawa, Masao; Terui, Mitsuru; and Yamaguchi, Nobuyasu, 4,608,213, Cl. 264-45.100.

Ikeda, Fukuji; and Takahashi, Toshiaki, to Nikka Chemical Industry Company Ltd. Heat-sensitive recording material. 4,608,580, Cl. 346-216.000.

Ikeda, Hideaki: *See—*
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.

Ikenaga, Akiyoshi: *See—*
Fukuda, Tatsuo; and Ikenaga, Akiyoshi, 4,608,518, Cl. 313-481.000.

Ikeoka, Naoaki; and Nakano, Akihiko, to Kabushiki Kaisha Komatsu Seisakusho. Drive mechanism for a mechanical press. 4,607,732, Cl. 192-12.00R.

Illger, Hans-Walter: *See—*
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,608,399, Cl. 521-129.000.

Illinois Tool Works Inc.: *See—*
Peek, Brian R.; and Sutenbach, Paul M., 4,607,976, Cl. 403-77.000.

Imai, Tamotsu: *See—*
Abrevaya, Hayim; and Imai, Tamotsu, 4,608,360, Cl. 502-226.000.

Immucor, Inc.: *See—*
Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., 4,608,246, Cl. 424-11.000.

Immuno Aktiengesellschaft fur chemisch-medizinische Produkte: *See—*
Philapitsch, Anton; and Linnau, Yendra, 4,608,254, Cl. 424-101.000.

Imperial Chemical Industries PLC: *See—*
Ballard, Denis G. H.; Cundy, Colin S.; Rideal, Graham R.; and Morley, David C. W., 4,608,303, Cl. 428-357.000.
Darwent, Brian J., 4,608,144, Cl. 204-257.000.

IN-PAK s.r.l.: *See—*
Valenti, Dante, 4,607,750, Cl. 206-443.000.

Inaba, Hiroshi; and Nishikawa, Kazuya, to Central Glass Company, Limited. Automotive window glass antenna. 4,608,570, Cl. 343-704.000.

Inaba, Masahito: *See—*
Yuasa, Yoshio; Naruse, Kazuhiko; and Inaba, Masahito, 4,608,522, Cl. 315-241.00P.

Inagaki, Takashi: *See—*
Nagataki, Motoi; and Inagaki, Takashi, 4,607,718, Cl. 180-226.000.

Inagawa, Jun: *See—*
Nagumo, Masahide; Kojima, Tadashi; and Inagawa, Jun, 4,608,692, Cl. 371-37.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Carena, Ugo, 4,607,968, Cl. 400-637.200.

Ingersoll-Rand Company: *See—*
Bennitt, Robert A., 4,607,660, Cl. 137-512.100.

Ingram, Alvin R., to Atlantic Richfield Company. Anti-static styrene polymer particles by impregnation. 4,608,394, Cl. 521-57.000.

Innovative Surgical Products, Inc.: *See—*
Wright, George M.; and Talcott, Thomas D., 4,608,050, Cl. 623-6.000.

Inochkin, Vladimir M.: *See—*
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, to Sumitomo Electric Industries Ltd. Positioning mechanism. 4,607,578, Cl. 108-145.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,608,143, Cl. 204-224.00M.
Inoue, Kiyoshi, 4,608,475, Cl. 219-69.00W.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. TW-electroerosion apparatus with wheeled drive carriages. 4,608,143, Cl. 204-224.00M.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for resetting a wire electrode in an operating setup on an electroerosion machine. 4,608,475, Cl. 219-69.00W.

Inoue, Masumi: *See—*
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, 4,607,889, Cl. 299-33.000.

Inoue, Takeshi: *See—*
Murakami, Yoshishige; Inoue, Takeshi; and Tanaka, Atsushi, 4,608,598, Cl. 358-113.000.

Interface Research Corporation: *See—*
McIntosh, Robert H., 4,608,289, Cl. 428-95.000.

Intermatch S.A.: *See—*
Ohnishi, Taiji, 4,608,508, Cl. 310-339.000.

International Business Machines Corporation: *See—*
Barry, Robert L., 4,608,667, Cl. 365-189.000.
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,608,664, Cl. 364-900.000.
Chang, Yihua E.; Grasso, Lawrence J.; Gruodis, Algirdas J.; and Morgan, Carroll E., 4,608,706, Cl. 377-39.000.
Davis, James W.; Moore, Victor S.; and Thoma, Nandor G., 4,608,649, Cl. 364-491.000.
Dutton, Patrick F., 4,608,687, Cl. 371-10.000.
Goth, George R.; Magdo, Ingrid E.; and Malaviya, Shashi D., 4,608,589, Cl. 357-34.000.
Klara, Walter S.; Kwap, Theodore W.; Marcello, Victor; and Rasmussen, Robert A., 4,608,669, Cl. 365-201.000.
Kummer, David A., 4,608,632, Cl. 364-200.000.
Minor, Richard G.; and Polischuk-Sawtschenko, Alexander, 4,608,562, Cl. 340-825.590.
Ramsey, David A.; Rohe, Clair F.; and Sawicki, Thomas E., 4,608,489, Cl. 235-462.000.
Rinkleib, Helfried O.; and Rueger, William J., 4,608,614, Cl. 360-95.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; and Helm, John R., 4,608,194, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,195, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,196, Cl. 252-522.00R.
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, 4,608,193, Cl. 252-522.00R.

International Safety Containers of Minnesota, Inc.: *See—*
LeSage, Richard; Reshanov, Eugene N.; and Schlemmer, Richard A., 4,607,857, Cl. 280-47.260.

International Standard Electric Corporation: *See—*
Blomley, Peter F.; Arton, Kenneth A.; Whittaker, Edward J.; and Lefevre, Andrew P., 4,608,462, Cl. 179-81.00B.
Burgess, David A.; and King, Malcolm R., 4,608,463, Cl. 179-115.50R.
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.

Interthyr Research Foundation, Inc.: *See—*
Ambesi-Impiombato, Francesco S., 4,608,341, Cl. 435-240.000.

Introtek Corporation: *See—*
Dam, Naim, 4,607,520, Cl. 73-19.000.

Inui, Tsuneo: *See—*
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,608,130, Cl. 204-27.000.

Inuiya, Masafumi: *See—*
Nakayama, Yoshiaki; and Inuiya, Masafumi, 4,608,595, Cl. 358-29.000.

Inuzuka, Takeshi: *See—*
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Ionics, Incorporated: *See—*
Goldstein, Arthur L., 4,608,140, Cl. 204-182.300.

Iowa State University Research Foundation, Inc.: *See—*
Gladon, Richard J.; and Koranski, David S., 4,608,076, Cl. 71-76.000.

Ipri, Alfred C.; and Stewart, Roger G., to RCA Corporation. Electrically alterable programmable nonvolatile floating gate memory device. 4,608,591, Cl. 357-54.000.

Irie, Toshio: *See—*
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, 4,608,320, Cl. 428-629.000.

Irie, Yoichiro: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.

Iron, Gera, to Electrical Accessories Ein Hashofet. Core and core laminations for electromagnetic devices. 4,608,547, Cl. 335-297.000.

Ishida, Haruhiko: *See—*
Kohyama, Mitsuaki; Kasai, Toshihiro; and Ishida, Haruhiko, 4,607,934, Cl. 355-3.00R.

Ishida, Masatoki: *See—*
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,608,130, Cl. 204-27.000.

Ishida Scales Mfg. Co., Ltd.: *See—*
Nishi, Hitoshi; Izumi, Asahiro; and Nishiyama, Sadanobu, 4,607,713, Cl. 177-25.000.

Ishida, Takao; and Nakatomi, Yoshitsugu, to Kabushiki Kaisha Toshiba. Optical deflector. 4,607,908, Cl. 350-6.800.

Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,607,508, Cl. 68-22.00R.

Ishiguri, Yukio: *See—*
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Ishihara, Atsushi; and Yoshimaru, Tomohisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Position detecting apparatus. 4,607,956, Cl. 356-375.000.

Ishihara, Yuji: *See—*
Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, 4,608,315, Cl. 428-425.900.

Ishii, Kenjiro; Aragaki, Masaharu; Kato, Osami; and Higashi, Masato, to Minolta Camera Kabushiki Kaisha. Mark detection apparatus for a micro-roll film. 4,607,950, Cl. 355-41.000.

Ishikawa, Shigeo: *See—*
Hirata, Yoshikatsu; and Ishikawa, Shigeo, 4,607,967, Cl. 400-175.000.

Ishikawa, Takuma: *See—*
Matsuyama, Yoshihiro; and Ishikawa, Takuma, 4,607,838, Cl. 271-293.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Umemoto, Tadahiro, 4,608,101, Cl. 148-127.000.

Ishimaru, Hajime; Miyamoto, Masao; and Komaki, Shojiro. Cooling trap for vacuum. 4,607,491, Cl. 62-55.500.

Ishito, Mitsuya: *See—*
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.

Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, to Fuji Photo Film Co., Ltd. Radiographic intensifying screen. 4,608,301, Cl. 428-328.000.

Ismail, Mohamed I., to Duracell Inc. Anode binders for electrochemical cells. 4,608,325, Cl. 429-217.000.

Isner, Robert E. Method for the electrostatic treatment of monofilaments. 4,608,212, Cl. 264-24.000.

Isobe, Toshiaki: *See—*
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.

Ito, Mikio: *See—*
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.

Ito, Toshimitsu: *See—*
Kobayashi, Nobuyuki; Ito, Toshimitsu; and Norota, Kazuhiko, 4,607,603, Cl. 123-492.000.

Ito, Yuusuke: *See—*
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.

Itoh, Takanobu, to Honda Giken Kogyo Kabushiki Kaisha. Body structure for automobiles. 4,607,878, Cl. 296-199.000.

Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, to Idemitsu Kosan Company Limited. Pitch material for carbonaceous body and a method for the preparation thereof. 4,608,150, Cl. 208-22.000.

ITT Corporation: *See—*
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.
Goldman, Stuart O., 4,608,711, Cl. 455-33.000.
Upp, Daniel C., 4,608,684, Cl. 370-58.000.

Ivony, Jozsefne : *See—*
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Iwao, Noriyuki: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.

Iwasaki, Eiji: *See—*
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,607,456, Cl. 49-352.000.

Izawa, Tetsurou: *See—*
Nishizawa, Shigeki; and Izawa, Tetsurou, 4,608,608, Cl. 358-213.000.

Izumi, Asahiro: *See—*
Nishi, Hitoshi; Izumi, Asahiro; and Nishiyama, Sadanobu, 4,607,713, Cl. 177-25.000.

Izumiyama, Hiroo: *See—*
Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, 4,607,687, Cl. 165-104.190.

J. R. Simplot Company: *See—*
Galland, Sherry A., 4,608,262, Cl. 426-243.000.

Jachetta, John J.: *See—*
Craig, Todd A.; and Jachetta, John J., 4,608,082, Cl. 71-118.000.

Jacob, Lewis E., to American Envelope Co. Easy open envelope. 4,607,749, Cl. 206-610.000.

Jacobs, Aaron R.; and Gustafson, John W. Ignition performance measuring circuit. 4,608,536, Cl. 324-399.000.

Jacobson, Earl B. Collapsible radiation attenuation system. 4,608,495, Cl. 250-517.100.

Jacobson, Stephen E., to Halcon SD Group, Inc., The. Process and accompanying catalysts for the hydroformylation of formaldehyde to glycol-aldehyde. 4,608,444, Cl. 568-462.000.

Jacobsson, Kurt A. G., to Aktiebolaget IRO. Yarn feeding device. 4,607,506, Cl. 66-125.00R.

Jacobsson, Kurt A. G., to Aktiebolaget IRO. Yarn-feeding apparatus for a circular knitting machine. 4,607,507, Cl. 66-132.00T.

Jacobsson, Paul, to Tellus Maskin AB. Transport arrangement especially for lining material. 4,607,994, Cl. 414-10.000.

Jacoby, John E.: *See*—
Tsai, Mei-Yuan; Jacoby, John E.; and Laemmle, Joseph T., 4,607,679, Cl. 164-5.000.

Jacquet, Bernard; and Lang, Gerard, to Societe Anonyme dite: L'Oreal. Quaternized polymers; process for preparing the same; and cosmetic compositions containing the same. 4,608,250, Cl. 424-71.000.

Jacquet, Bernard; and Gaetani, Quintino, to Societe Anonyme dite: L'Oreal. Method for producing a non greasy protective and emollient film on the skin. 4,608,392, Cl. 514-844.000.

Jaeger, Walter, to GX-Holding AG. Method for the surveyance of an object space. 4,608,597, Cl. 358-113.000.

Jahani, Hooshang, to National Semiconductor Corporation. Lead-frame splicer welder and method. 4,608,479, Cl. 219-87.000.

Jain, Prem C.; and Enns, Frederick, to Northern Telecom Limited. Packet and circuit switched communications network. 4,608,685, Cl. 370-85.000.

James C. Barber and Associates, Inc.: *See*—
Barber, James C., 4,608,241, Cl. 423-317.000.

Jamiolkowski, Dennis D.: *See*—
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,608,428, Cl. 528-192.000.

Janos, Edward: *See*—
Siecke, Albert E.; and Janos, Edward, 4,607,483, Cl. 57-334.000.

Jansen, George A., to Houdaille Industries, Inc. Apparatus for securing a hose to a fitting. 4,607,867, Cl. 285-242.000.

Jansen, Gerardus L. M., to U.S. Philips Corporation. Electrodynamic device for translating a lens system. 4,607,913, Cl. 350-247.000.

Janssen, Alexander P. Visible index pocket constructions. 4,607,443, Cl. 40-405.000.

Janutta, Reinhard; Uhlig, Uwe; and Redeker, Werner, to Hauni-Werke Korber & Co. KG. Apparatus for dressing grinding wheels. 4,607,607, Cl. 125-11.0CD.

Japan Aviation Electronics Industry Limited: *See*—
Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, 4,607,903, Cl. 339-63.00R.

Japan Medical Supply Co Ltd: *See*—
Kato, Yasuaki, 4,608,472, Cl. 219-10.430.

Japan Tobacco Inc.: *See*—
Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, 4,607,645, Cl. 131-109.100.

Japax Incorporated: *See*—
Shimizu, Akihiko, 4,608,476, Cl. 219-69.00M.

Jarecki, Frank E. Insect trap. 4,607,451, Cl. 43-139.000.

Jarvis, Sidney H., to LRC Products Limited. Sorting articles from bulk. 4,607,474, Cl. 53-117.000.

Jean Walterscheid GmbH: *See*—
Geisthoff, Hubert, 4,607,538, Cl. 74-417.000.

Jefferson, Valerie. Heating pad and massager. 4,607,624, Cl. 128-24.200.

Jelbart, John E. Mobile grain auger. 4,607,740, Cl. 198-320.000.

Jeol Ltd.: *See*—
Kokubo, Yasushi, 4,608,491, Cl. 250-311.000.

Jeswine, William W., to Jeswine, William W. Parachute assembly. 4,607,813, Cl. 244-145.000.

Jewell, Robert M., Jr. Tool for cutting, stripping and connecting electric wire. 4,607,544, Cl. 81-9.400.

Jim Walter Resources, Inc.: *See*—
Hill, George R.; and Jordan, Larry C., 4,607,568, Cl. 98-50.000.

Jochum, Vincent F. Grease zerk ram. 4,607,727, Cl. 184-38.100.

Johannes, Gerhard: *See*—
Brindopke, Gerhard; and Johannes, Gerhard, 4,608,420, Cl. 525-375.000.

Johanning, Hermann, to Engelbrecht & Lemmerbrock GmbH & Co. Plant for the continuous preparation of floated fodder. 4,607,957, Cl. 366-156.000.

Johansson, Anne S.; and Hogman, Claes F. Method of separating blood components. 4,608,178, Cl. 210-744.000.

Johansson, Leif: *See*—
Holmstrom, Sven A.; and Johansson, Leif, 4,608,083, Cl. 75-83.000.

John Brown Inc.: *See*—
Whiteside, Robert C.; and Arends, Albert W., 4,608,009, Cl. 425-590.000.

John Wyeth & Brother Limited: *See*—
Boyle, John T. A., 4,608,379, Cl. 514-318.000.

Johnson, Alfred L., to United States of America, Air Force. Thermal regenerator. 4,607,424, Cl. 29-157.30R.

Johnson, Brion, to Harris Corporation. Microprocessor driven video generator. 4,608,603, Cl. 358-183.000.

Johnson, Gregory J.: *See*—
Eisenberg, Sidney W.; and Johnson, Gregory J., 4,607,861, Cl. 280-702.000.

Johnson & Johnson Products, Inc.: *See*—
Lauritzen, Nels J., 4,607,633, Cl. 128-156.000.

Johnson, Judith L.; and Showalter, Hollis D., to Warner-Lambert Company. Process for preparing substituted anthra[1,9-cd]pyrazol-6(2H)-ones. 4,608,439, Cl. 548-357.000.

Jones, J. Paul, to Med-Tech Associates. Escapement device. 4,607,766, Cl. 222-386.500.

Jordan, Larry C.: *See*—
Hill, George R.; and Jordan, Larry C., 4,607,568, Cl. 98-50.000.

Josephson, Elliot; and Parker, Frederick S., to Astec Components, Ltd. Current driven flyback power supply. 4,608,625, Cl. 363-21.000.

Jospe, Jack: *See*—
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, 4,607,510, Cl. 70-95.000.

Jospe, Joe: *See*—
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, 4,607,510, Cl. 70-95.000.

Jouade , Pierre: *See*—
Bodin, Francois; Jouade , Pierre; and Le Guillant, Daniel, 4,607,828, Cl. 267-140.100.

Jouve, Hubert: *See*—
Fedeli, Jean-Marc; and Jouve, Hubert, 4,608,677, Cl. 365-19.000.

Joy Manufacturing Company: *See*—
Pendolino, Eugene F.; Edmondson, Wayne L.; and O'Neill, Michael L., 4,607,891, Cl. 299-92.000.

Judchits, Nikolai N.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Judge, John L., to Tektronix, Inc. Detecting improper operation of a digital data processing apparatus. 4,608,690, Cl. 371-21.000.

Juengel, Richard O., to GTE Valeron Corporation. Low battery detector for a machine system using infrared telemetry. 4,608,714, Cl. 455-603.000.

Junkosha Company Ltd.: *See*—
Nomi, Haruo, 4,608,299, Cl. 428-283.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Egawa, Akira, 4,608,568, Cl. 343-8.000.
Ikeoka, Naoaki; and Nakano, Akihiko, 4,607,732, Cl. 192-12.00R.

Kabushiki Kaisha Nipponcoinco: *See*—
Kobayashi, Osamu; Yukimoto, Koji; and Mikami, Mitsugu, 4,607,650, Cl. 133-5.00R.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Kouketsu, Eiji; and Tsumagari, Masato, 4,607,864, Cl. 280-808.000.

Kabushiki Kaisha Tominaga Jyushikogyosho: *See*—
Tominaga, Kazutoshi, 4,608,000, Cl. 417-413.000.

Kabushiki Kaisha Toshiba: *See*—
Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, 4,607,945, Cl. 355-14.00R.
Ishida, Takao; and Nakatomi, Yoshitsugu, 4,607,908, Cl. 350-6.800.
Kohyama, Mitsuaki; Kasai, Toshihiro; and Ishida, Haruhiko, 4,607,934, Cl. 355-3.00R.
Kuwahata, Takao; Manabe, Sohei; and Gonpei, Katsuhiro, 4,608,514, Cl. 313-386.000.
Miura, Kenji, 4,608,485, Cl. 235-379.000.
Nagumo, Masahide; Kojima, Tadashi; and Inagawa, Jun, 4,608,692, Cl. 371-37.000.
Shiosaki, Masao, 4,608,681, Cl. 369-77.200.
Sukenobu, Satoru, 4,607,493, Cl. 62-55.500.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Asano, Masakazu, 4,607,997, Cl. 414-667.000.

K.K. Piem Riken: *See*—
Ohnishi, Taiji, 4,608,508, Cl. 310-339.000.

Kada, Hironosuke: *See*—
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.

Kadin, Alan M.: *See*—
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Kaga, Mitsuru; and Tanaka, Shigetaka, to Ricoh Company, Ltd. Synchronization detection system for data transmission. 4,608,703, Cl. 375-114.000.

Kagarise, Herbert N.: *See*—
Patitsas, George P.; and Kagarise, Herbert N., 4,607,675, Cl. 152-521.000.

Kahn, Richard A.; and Rodey, Glenn E., to American National Red Cross. Biocompatible method for in situ production of functional platelets and product produced thereby lacking immunogenicity. 4,608,255, Cl. 424-101.000.

Kaiser, Bernhard, to Kienzle Apparate GmbH. Coin activated timer mechanism. 4,607,739, Cl. 194-227.000.

Kaiser, Dennis G.; and Kaiser, Robert D., to AmCan, Inc. Enclosed mousetrap having improved trap mechanism. 4,607,450, Cl. 43-83.000.

Kaiser, Robert D.: *See*—
Kaiser, Dennis G.; and Kaiser, Robert D., 4,607,450, Cl. 43-83.000.

Kajima Keneetus Kabushiki Kaisha: *See*—
Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, 4,607,687, Cl. 165-104.190.

Kaken Pharmaceutical Co., Ltd.: *See*—
Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, 4,608,438, Cl. 548-341.000.

Kallergis, Michael, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Method of determining a clean propeller pressure signal from a propeller/engine exhaust combined signal measured in flight with a microphone arranged on a propeller-driven aircraft. 4,607,528, Cl. 73-602.000.

Kalmykov, Vyacheslav N.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Kaltenbach & Voight GmbH & Co.: *See*—
Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, 4,607,413, Cl. 15-301.000.

Kamata, Yoshikiyo, to Kioritz Corporation. Suction device for two-cylinder internal combustion engine. 4,607,598, Cl. 123-56.0BC.

Kamigaichi, Hideyuki; Kurachi, Kazuto; Asano, Nobuyoshi; and Hanada, Tatsuo, to Adek Corporation. In-pipe inspection system. 4,607,925, Cl. 354-63.000.

Kamiji, Koichi: *See*—
Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, 4,607,903, Cl. 339-63.00R.

Kamijo, Yoshimi: *See*—
Igarashi, Masami; Kato, Yoshinori; and Kamijo, Yoshimi, 4,608,308, Cl. 428-408.000.

Kaminaga, Seiji: *See*—
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.

Kamiyama, Hiromitsu: *See*—
Hakamada, Haruo; Amano, Tadashi; and Kamiyama, Hiromitsu, 4,607,949, Cl. 355-40.000.

Kamiyama, Kazushi: *See*—
Nakano, Yuji; Kamiyama, Kazushi; and Kobayashi, Tatuo, 4,608,307, Cl. 428-402.000.

Kamoshita, Katsuzo: *See*—
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Kampe, Wolfgang: *See*—
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

Kan, Fumitaka: *See*—
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.

Kanamori, Nobutaka; and Kurosawa, Masaji, to Nichias Corporation; Honshu Paper Mfg. Co., Ltd.; and Sakai Chemical Industry Co., Ltd. Catalyst carriers and process for preparation of the same. 4,608,361, Cl. 502-232.000.

Kaneko, Akira; Fumoto, Teruo; and Nishida, Jun, to Matsushita Electric Industrial Co., Ltd. Infrared image pickup image. 4,608,599, Cl. 358-113.000.

Kaneko, Toshiki: *See*—
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.

Kanesho Company Limited: *See*—
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.

Kangas, Roy J.: *See*—
Kangas, Vernon W.; Kangas, Roy J.; and Matson, Edsel D., 4,607,672, Cl. 144-2.00R.

Kangas, Vernon W.; Kangas, Roy J.; and Matson, Edsel D., to United States of America, Agriculture. Multi-product wood processor. 4,607,672, Cl. 144-2.00R.

Kanno, Katsuo: *See*—
Hishimuma, Sumio; and Kanno, Katsuo, 4,607,409, Cl. 8-152.000.

Kanoh, Junichi; and Aoki, Kongoh, to Aisin Seiki Kabushiki Kaisha. Oil separator for internal combustion engine. 4,607,604, Cl. 123-572.000.

Kapadia, Nikul S., to Becton Dickinson and Company. Imbalance measuring system and method. 4,608,650, Cl. 364-508.000.

Kapetanokos, Christos A.: *See*—
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, 4,608,537, Cl. 328-237.000.

Kapples, Kevin J.: *See*—
Effland, Richard C.; Davis, Larry; and Kapples, Kevin J., 4,608,374, Cl. 514-211.000.

Kapps, Manfred: *See*—
Kerimis, Dimitrios; Muller, Hanns P.; and Kapps, Manfred, 4,608,407, Cl. 524-14.000.

Karinthi, Pierre; Gardent, Maurice; Regnier, Colette; and Tuccella, Jean, to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude. Ground congelation process and installation. 4,607,488, Cl. 62-45.000.

Karl, Rudolf: *See*—
Acker, Rolf-Dieter; Karl, Rudolf; and Wuerzer, Bruno, 4,608,078, Cl. 71-88.000.

Karp, Richard A.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.

Kasai, Toshihiro: *See*—
Kohyama, Mitsuaki; Kasai, Toshihiro; and Ishida, Haruhiko, 4,607,934, Cl. 355-3.00R.

Kashima, Yutaka: *See*—
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, 4,607,889, Cl. 299-33.000.

Kato, Kenneth J.: *See*—
Frollini, Dominick, Jr.; Falconer, Dennis G.; and Kato, Kenneth J., 4,608,148, Cl. 204-408.000.

Kato, Masayuki: *See*—
Ueda, Ikuo; and Kato, Masayuki, 4,608,375, Cl. 514-218.000.

Kato, Osami: *See*—
Ishii, Kenjiro; Aragaki, Masaharu; Kato, Osami; and Higashi, Masato, 4,607,950, Cl. 355-41.000.

Kato, Toshiro: *See*—
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Kato, Yasuaki, to Japan Medical Supply Co Ltd. Method of and apparatus for sterilizing devices. 4,608,472, Cl. 219-10.430.

Kato, Yoshinori: *See*—
Igarashi, Masami; Kato, Yoshinori; and Kamijo, Yoshimi, 4,608,308, Cl. 428-408.000.

Katsura, Tadashi: *See*—
Minai, Masayoshi; and Katsura, Tadashi, 4,608,442, Cl. 568-346.000.

Katsuyama, Yoshiaki: *See*—
Wada, Toshiaki; and Katsuyama, Yoshiaki, 4,608,293, Cl. 428-141.000.

Katterloher, Reinhard: *See*—
Demus, Wolfgang; and Katterloher, Reinhard, 4,607,492, Cl. 62-55.500.

Katz, Emanuel E.: *See*—
Bergin, Ralph M.; Katz, Emanuel E.; and Widicus, Warren A., 4,608,263, Cl. 426-303.000.

Kaufmann, Meinolph: *See*—
Amstutz, Hermann; Kaufmann, Meinolph; and Scheffer, Terry J., 4,608,558, Cl. 340-784.000.

Kawade, Hiroyuki: *See*—
Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, 4,608,203, Cl. 530-378.000.

Kawakami, Yoshinobu: *See*—
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, 4,607,936, Cl. 355-3.0DR.

Kawasaki Steel Corporation: *See*—
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, 4,608,320, Cl. 428-629.000.

Kaye, Gordon E.: *See*—
D'Alessandro, Robert; Cardenas, Carlos; and Kaye, Gordon E., 4,607,904, Cl. 339-108.00R.

Kazaoka, Kenichi; and Okazaki, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Seat for vehicles. 4,607,827, Cl. 267-107.000.

Keating, Richard. Infrared burner assembly for a griddle. 4,607,609, Cl. 126-39.00J.

Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., to Energy Conversion Devices, Inc. Superconducting films and devices exhibiting AC to DC conversion. 4,608,296, Cl. 428-215.000.

Keil, Karl-Heinz: *See*—
Greiner, Ulrich; Keil, Karl-Heinz; Heinrich, Rudolf; and Albrecht, Konrad, 4,608,277, Cl. 427-213.300.

Keller, Arnold, to Waldemar Link GmbH & Co. Femoral hip prosthesis. 4,608,053, Cl. 623-23.000.

Keller, Howard J.: *See*—
Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., 4,608,633, Cl. 364-200.000.

Kelley, Brian: *See*—
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, 4,608,432, Cl. 528-274.000.

Kelley, Reginald D., to Force Control Industries, Inc. Multiple speed drive system. 4,607,736, Cl. 192-18.00A.

Kelly, John W., to Haskel, Inc. Swaging method and apparatus for axially extended expansion of tubes. 4,607,426, Cl. 29-421.00R.

Kelman, Charles D. Intraocular lens and method of inserting an intraocular lens into an eye. 4,608,049, Cl. 623-6.000.

Kennametal Inc.: *See*—
Makrides, Nichoias; and Stephenson, Earle W., 4,608,318, Cl. 428-553.000.

Kenney Manufacturing Company: *See*—
Comeau, Paul E., 4,607,677, Cl. 160-84.00R.

Kepes, Josef. Power rake. 4,607,704, Cl. 172-42.000.

Keresztessy nee Badi, Maria; Paka nee Kas, Eleonora; Gyongyossy, Lajos; Farkas, Bela; and Paku, Sandor, to Szegvari Haziipari Szovetkezet. Plastic deformable composition and process for the preparation thereof. 4,608,090, Cl. 106-272.000.

Kerimis, Dimitrios; Muller, Hanns P.; and Kapps, Manfred, to Bayer Aktiengesellschaft. Process for the production of compression-molded materials containing polyisocyanate binders using latent, heat activatable catalysts. 4,608,407, Cl. 524-14.000.

Kerko, David J.; Morgan, David W.; and Morse, David L., to Corning Glass Works. Photochromic glass compositions for lightweight lenses. 4,608,349, Cl. 501-13.000.

Keshtbod, Parviz, to Signetics Corporation. Electrically erasable PROM cell. 4,608,585, Cl. 357-23.500.

Kesling, Haven S., Jr.; and Gillman, Hyman D., to Atlantic Richfield Company. Alkoxylated ether sulfate anionic surfactants from branched chain plasticizer alcohols. 4,608,197, Cl. 252-551.000.

Kessler, Wolfgang: *See*—
Finzer, Heinz; and Kessler, Wolfgang, 4,607,517, Cl. 72-449.000.

Khanna, Pyare; Snyder, Evan S.; and Singh, Prithipal, to Syntex (U.S.A.) Inc. Chloramphenicol derivatives antigens and antibodies. 4,608,252, Cl. 424-85.000.

Khanna, Pyare L.; Snyder, Evan S.; and Singh, Prithipal, to Syntex (U.S.A.) Inc. Chloramphenicol derivatives, antigens and antibodies. 4,608,200, Cl. 530-387.000.

Kice, John E., to Kice Metal Products Co., Inc. Multiple lift pneumatic conveying air velocity control apparatus and method for controlling the pneumatic velocity in a multiple lift pneumatic conveying air velocity control apparatus. 4,607,987, Cl. 406-14.000.

Kice Metal Products Co., Inc.: *See*—
Kice, John E., 4,607,987, Cl. 406-14.000.

Kida, Yasushi: *See*—
Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, 4,607,578, Cl. 108-145.000.

Kido, Sumiaki: *See*—
Hirose, Nagayoshi; Kido, Sumiaki; and Fuzita, Yoshiharu, 4,608,488, Cl. 235-384.000.

Kienzle Apparate GmbH: *See*—
Kaiser, Bernhard, 4,607,739, Cl. 194-227.000.

Kilian, Ernst A.: *See*—
Dijkmans, Eise C.; Graffenberger, Wilhelm; and Kilian, Ernst A., 4,608,502, Cl. 307-243.000.

Killough, Stephen M.: *See*—
Martin, H. Lee; and Killough, Stephen M., 4,608,526, Cl. 318-628.000.

Kim, Ock-Ky, to AT&T Bell Laboratories. Back-illuminated photodiode with a wide bandgap cap layer. 4,608,586, Cl. 357-30.000.

Kimberly-Clark Corporation: *See*—
Lassen, Frederich O., 4,608,292, Cl. 428-131.000.
Schroth, Carl G.; and Thorson, Russell E., 4,608,115, Cl. 156-519.000.

Kimura, Hiroshi: *See*—
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.
Watashi, Masahiro; Kimura, Hiroshi; Shibata, Kiyoshi; Hisajima, Masahiko; and Yamamoto, Kiyonori, 4,607,734, Cl. 192-67.00R.

Kimura, Shinji: *See*—
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.

Kindt, Robert J.; and Peffer, Robert M., to Eastman Kodak Company. Roller transfer apparatus. 4,607,935, Cl. 355-3.0TR.

King, Malcolm R.: *See*—
Burgess, David A.; and King, Malcolm R., 4,608,463, Cl. 179-115.50R.

Kington, Alan D.: *See*—
Mills, David; Kington, Alan D.; and Close, Rodney J., 4,607,680, Cl. 164-134.000.

Kinion, Stephen R. Vehicle wheel alignment device. 4,607,519, Cl. 72-457.000.

Kinner, Samuel D.: *See*—
Reighard, Robert P.; Kinner, Samuel D.; and Ciesielski, Mark, 4,607,898, Cl. 339-3.00S.

Kinoshita, Satoshi; and Yamamoto, Yoshimi, to Fuji Kiko Company, Limited. Adjustable automotive steering column with adjustable tilt and top-position lock. 4,607,540, Cl. 74-493.000.

Kinukawa, Hiroshi: *See*—
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.

Kioritz Corporation: *See*—
Kamata, Yoshikiyo, 4,607,598, Cl. 123-56.0BC.

Kirkman, Chester M. Tool for hanging baskets. 4,607,871, Cl. 294-19.100.

Kirtley, James L., Jr.; Sterling, Thomas L.; and Williams, Ronald D., to Massachusetts Institute of Technology. Serial multi-drop data link. 4,608,700, Cl. 375-36.000.

Kishi, Atsuo: *See*—
Hayase, Isao; and Kishi, Atsuo, 4,608,002, Cl. 418-86.000.

Kisida, Hirosi; Hatakoshi, Makoto; and Nishida, Sumio, to Sumitomo Chemical Company, Limited. Carbamate compounds and their use as insecticides. 4,608,389, Cl. 514-539.000.

Kiss, Janosne : *See*—
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Kissel, Thomas R.: *See*—
Daniel, Daniel S.; and Kissel, Thomas R., 4,608,149, Cl. 204-418.000.

Kitajima, Houdo: *See*—
Yamamoto, Takashi; Kitajima, Houdo; and Takahashi, Hiroyuki, 4,608,509, Cl. 310-357.000.

Kitamoto, Tatsuji: *See*—
Umemura, Shizuo; and Kitamoto, Tatsuji, 4,608,093, Cl. 148-6.350.

Kitamura, Koichiro, to Kitamura Machinery Co., Ltd. Machine tool. 4,607,989, Cl. 409-232.000.

Kitamura Machinery Co., Ltd.: *See*—
Kitamura, Koichiro, 4,607,989, Cl. 409-232.000.

Kitsunai, Tomoyuki; Miura, Tetsuji; and Yagi, Norio, to Denki Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin composition containing an imide polymer and graft copolymer. 4,608,414, Cl. 525-71.000.

Kiya, Nobuyuki, to Fanuc Ltd. Tool life, offset, and selection supervision method. 4,608,644, Cl. 364-474.000.

Kiyomoto, Masayuki: *See*—
Yokoshima, Minoru; Ohkubo, Tetsuo; and Kiyomoto, Masayuki, 4,608,400, Cl. 522-96.000.

Klaff, Harry J., to Rockland Industries. Weather proof insulating textile fabric composite. 4,608,298, Cl. 428-246.000.

Klamer, Reuben B.; and Greenwood, Donald. Soft propellable toy. 4,608,027, Cl. 446-457.000.

Klara, Walter S.; Kwap, Theodore W.; Marcello, Victor; and Rasmussen, Robert A., to International Business Machines Corporation. Self contained array timing. 4,608,669, Cl. 365-201.000.

Klein, Edward P.; and Nissan, Alfred H., to Westvaco Corporation. Method for washing a paper fiber on a belt washer using a sonic frequency disturbance. 4,608,122, Cl. 162-60.000.

Kleinschmit, Peter: *See*—
Strack, Hans; and Kleinschmit, Peter, 4,608,236, Cl. 423-118.000.

Klingler, Knud: *See*—
Michels, Hartwig; and Klingler, Knud, 4,607,715, Cl. 180-118.000.

Kluge, Arthur F.; Willis, Anthony L.; and O'Yang, Counde, to Syntex (U.S.A.) Inc. Novel [4,2,0]bicyclooctane derivatives with valuable therapeutic properties. 4,608,388, Cl. 514-510.000.

KMS Fusion, Inc.: *See*—
Brueckner, Keith A., 4,608,222, Cl. 376-104.000.

Knecht, Adolf; and Augart, Helmut, to Warner-Lambert Company. Process for time-controlled release of active ingredients. 4,608,248, Cl. 424-19.000.

Knelson, Benjamin V. Centrifugal separator. 4,608,040, Cl. 494-27.000.

Knight, Jack D.: *See*—
Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., 4,607,700, Cl. 166-303.000.

Knoll, Heinz W.: *See*—
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.

Knorr-Bremse AG: *See*—
Staltmeir, Josef; and Wosegien, Bernd, 4,607,729, Cl. 188-153.00R.

Knoth, Werner-Dieter; Hullen, Helmut; and Kopatz, Klaus, to VEBA-GLAS AG. Gob distributor. 4,608,074, Cl. 65-164.000.

Knudson, Mark M. Snow ski machine. 4,607,839, Cl. 272-97.000.

Kobashi, Mamoru: *See*—
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.

Kobayashi, Hideki: *See*—
Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, 4,607,645, Cl. 131-109.100.

Kobayashi, Kazuo: *See*—
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

Kobayashi, Kinzo, to Tokico Ltd. Pad spring for disc brake and having restricting portion. 4,607,728, Cl. 188-73.380.

Kobayashi, Mamoru; Sasaki, Hideaki; and Hara, Yasuhiko, to Hitachi, Ltd. Component alignment apparatus. 4,608,494, Cl. 250-461.100.

Kobayashi, Michiaki: *See*—
Takeuchi, Hideo; Kobayashi, Michiaki; and Shibasaki, Makoto, 4,607,571, Cl. 101-365.000.

Kobayashi, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Electrolytic method and apparatus. 4,608,138, Cl. 204-129.300.

Kobayashi, Nobuyuki; Ito, Toshimitsu; and Norota, Kazuhiko, to Toyota Jidosha Kabushiki Kaisha. Fuel injection system employing the second time differential of pressure or air flow rate. 4,607,603, Cl. 123-492.000.

Kobayashi, Osamu; Yukimoto, Koji; and Mikami, Mitsugu, to Kabushiki Kaisha Nipponcoinco. Coin dispensing apparatus. 4,607,650, Cl. 133-5.00R.

Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, to Honda Giken Kogyo Kabushiki Kaisha. Material sheet for metal sintered body and method for manufacturing the same and method for manufacturing metal sintered body. 4,608,317, Cl. 428-546.000.

Kobayashi, Satoshi: *See*—
Awane, Misao; Hara, Seiji; and Kobayashi, Satoshi, 4,608,487, Cl. 235-383.000.

Kobayashi, Tatuo: *See*—
Nakano, Yuji; Kamiyama, Kazushi; and Kobayashi, Tatuo, 4,608,307, Cl. 428-402.000.

Koch, Earl E., to New Holland Inc. Lateral transport trailer. 4,607,996, Cl. 414-537.000.

Koch, Gabriele I.: *See*—
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.

Koch, Karlheinz; Wegener, Ingo; and Giesen, Brigitte, to Henkel Kommanditgesellschaft auf Aktien. Detergents and liquid cleaners free of inorganic builders. 4,608,189, Cl. 252-174.220.

Kodaira, Takanori: *See*—
Egawa, Akira; Kodaira, Takanori; and Namai, Akihiro, 4,607,932, Cl. 354-468.000.

Kohka, Kenichi, to Sharp Kabushiki Kaisha. Negative thermal expansion metal electrically connected to motor means for microwave oven. 4,608,474, Cl. 219-10.55R.

Kohler, Bernard, to Compagnie des Transmissions Mechaniques Sedis. Detachable timing gear cassette unit for an explosion or internal combustion engine. 4,607,601, Cl. 123-90.310.

Kohler, Gustav; Kohler, Mikael; and Kohler, Ulf. Alternator apparatus. 4,607,419, Cl. 29-24.500.

Kohler, Mikael: *See*—
Kohler, Gustav; Kohler, Mikael; and Kohler, Ulf, 4,607,419, Cl. 29-24.500.

Kohler, Robert D.: *See*—
Hedler, Robert C.; Kohler, Robert D.; and Dunlap, John H., 4,608,709, Cl. 382-1.000.

Kohler, Ulf: *See*—
Kohler, Gustav; Kohler, Mikael; and Kohler, Ulf, 4,607,419, Cl. 29-24.500.

Kohli, Dalip K., to American Cyanamid Co. Polyimide from unsaturated imide, polyamine and aldehyde. 4,608,431, Cl. 528-246.000.

Kohyama, Mitsuaki; Kasai, Toshihiro; and Ishida, Haruhiko, to Kabushiki Kaisha Toshiba. Electrophotography using a photosensitive drum with multi-photosensitive layers sensitive to different wave lengths. 4,607,934, Cl. 355-3.00R.

Koichi, Kenji: *See*—
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.

Koike, Yujiro. Method of hydroponically growing plant sprouts and apparatus therefor. 4,607,454, Cl. 47-63.000.

Kojima, Hiroshi: *See*—
Shimada, Yutaka; Kojima, Hiroshi; and Hasegawa, Takashi, 4,608,297, Cl. 428-215.000.

Kojima, Tadashi: *See*—
Nagumo, Masahide; Kojima, Tadashi; and Inagawa, Jun, 4,608,692, Cl. 371-37.000.

Kojima, Yutaka; Masuda, Toshiyuki; and Hisamatsu, Nobuo, to Matsushita Electric Works, Ltd. Time division multiplexing load control system having manual switch for directly controlling loads. 4,608,561, Cl. 340-825.520.

Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, to Enso-Gutzeit Oy. Feed and accept duct system for hydrocyclones. 4,608,174, Cl. 210-512.200.

Kokubo, Yasushi, to Jeol Ltd. Electron beam instrument. 4,608,491, Cl. 250-311.000.

Komaki, Shojiro: *See*—
Ishimaru, Hajime; Miyamoto, Masao; and Komaki, Shojiro, 4,607,491, Cl. 62-55.500.

Komakine, Chukei. Method of treating cachexia. 4,608,256, Cl. 424-147.000.

Komurasaki, Satoshi, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing control apparatus for internal combustion engine. 4,607,602, Cl. 123-425.000.

Kondo, Michikazu: *See*—
Nagashima, Kunio; and Kondo, Michikazu, 4,608,682, Cl. 370-4.000.

Kondo, Norio: *See*—
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, 4,607,889, Cl. 299-33.000.

Konishi, Satoshi: *See*—
Ohno, Jun-ichi; and Konishi, Satoshi, 4,608,668, Cl. 365-200.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Hakamada, Haruo; Amano, Tadashi; and Kamiyama, Hiromitsu, 4,607,949, Cl. 355-40.000.
Haneda, Satoshi; and Hiratsuka, Seiichi, 4,607,933, Cl. 355-3.0DD.

Kopatz, Klaus: *See*—
Knoth, Werner-Dieter; Hullen, Helmut; and Kopatz, Klaus, 4,608,074, Cl. 65-164.000.

Kopecky, Ivyl D., to Haybuster Manufacturing, Inc. Furrow opener for seeder. 4,607,581, Cl. 111-73.000.

Kopf, Hartmut; and Kopf-Maier, Petra. Use of cyclopentadienyl metal-acido complexes for the treatment of cancer and pharmaceutical compositions containing said complexes. 4,608,387, Cl. 514-492.000.

Kopf-Maier, Petra: *See*—
Kopf, Hartmut; and Kopf-Maier, Petra, 4,608,387, Cl. 514-492.000.

Koppers Company, Inc.: *See*—
Hood, Richard T.; and Bender, Raymond L., 4,608,408, Cl. 524-15.000.

Koranski, David S.: *See*—
Gladon, Richard J.; and Koranski, David S., 4,608,076, Cl. 71-76.000.

Korba, Brent E.: *See*—
Yoakum, George H.; Harris, Curtis C.; Korba, Brent E.; and Lechner, John F., 4,608,339, Cl. 435-172.200.

Kosonocky, Walter F., to RCA Corporation. Method of making a charge-coupled device image sensor. 4,607,429, Cl. 29-572.000.

Koster, Lothar: *See*—
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.

Kosuzume, Hiroshi: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,608,253, Cl. 424-94.000.

Kotzab, Werner: *See*—
Hans, Rudiger; and Kotzab, Werner, 4,607,737, Cl. 192-88.00A.

Kouge, Shinichi: *See*—
Morishita, Mitsuharu; and Kouge, Shinichi, 4,608,639, Cl. 364-424.000.

Kouketsu, Eiji; and Tsumagari, Masato, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho; and Daihatsu Motor Co. Webbing support device. 4,607,864, Cl. 280-808.000.

Koya, Kazuo: *See*—
Yokokawa, Kiyoshi; Koya, Kazuo; and Hosino, Syouji, 4,608,071, Cl. 65-13.000.

Koyama, Haruo; and Nishino, Toshio, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,607,942, Cl. 355-3.0SH.

Kraatz, Paul: *See*—
Rowe, James M.; Kraatz, Paul; and Holmes, Samuel J., 4,608,272, Cl. 427-53.100.

Kraftwerk Union Aktiengesellschaft: *See*—
Schabert, Hans-Peter; Heller, Max; Laurer, Erwin; and Leinweber, Hans, 4,607,822, Cl. 251-334.000.

Krage, William G.; and Denman, Owen S., to Energy Absorption Systems, Inc. Guardrail end terminal. 4,607,824, Cl. 256-13.100.

Krajewski, John J.: *See*—
Coady, Clive J.; Krajewski, John J.; and Bishop, Timothy E., 4,608,409, Cl. 524-199.000.

Kralik, Andrew J., to Siemens-Allis, Inc. Movable contact arm assembly for a current limiting circuit breaker. 4,608,545, Cl. 335-16.000.

Kramer, James H.; and Orndorff, Roy L., Jr., to B. F. Goodrich Company, The. Water lubricated bearing. 4,607,964, Cl. 384-98.000.

Krampen, Adalbert A.; Ells, Delbert O.; Bjerke, Robert K.; and Ward, James P., to Omark Industries, Inc. Primer composition. 4,608,102, Cl. 149-92.000.

Kranjec, Stan. Panel mounting arrangement. 4,607,576, Cl. 108-110.000.

Kras, Stephen J.: *See*—
Taber, James M.; and Kras, Stephen J., 4,607,768, Cl. 222-556.000.

Krasnokutsky, Valentin P.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

Krause, Dieter, to Siemens Aktiengesellschaft. Device for cutting glass fibers. 4,607,775, Cl. 225-96.500.

Krempel, Fritz, to Mauser-Werke Oberndorf GmbH. Exchangeable turning head, particularly a face turning head. 4,607,549, Cl. 82-2.00E.

Kreuzberg, Heinz: *See*—
Tinnes, Bernhard; and Kreuzberg, Heinz, 4,607,681, Cl. 164-453.000.

Krogsgaard-Larsen, Povl: *See*—
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.

Krongold, Martin A., to MG Industries. Method and apparatus for producing cold gas at a desired temperature. 4,607,489, Cl. 62-49.000.

Krug, Martin: *See*—
Ferdows, Houshang; Krug, Martin; and Bihl, Paul R., 4,607,497, Cl. 62-179.000.

Kuhara, Yoshiki: *See*—
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, 4,608,535, Cl. 324-244.000.

Kuhasalo, Antti: *See*—
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.

Kukanskis, Peter E.; Grunwald, John J.; and Sawoska, David, to MacDermid, Incorporated. Oxidizing accelerator. 4,608,275, Cl. 427-98.000.

Kukes, Simon G.: *See*—
Howell, Jerald A.; and Kukes, Simon G., 4,608,152, Cl. 208-108.000.

Kula, John; and Miksza, Anthony S., Jr., to Ethicon, Inc. Surgical instrument for applying fasteners having tissue locking means for maintaining the tissue in the instrument while applying the fasteners (case I). 4,607,636, Cl. 128-334.00R.

Kulkarni, Sudhir S.: *See*—
Kulprathipanja, Santi; and Kulkarni, Sudhir S., 4,608,060, Cl. 55-16.000.

Kulprathipanja, Santi; and Kulkarni, Sudhir S., to UOP Inc. Separation of polar gases from nonpolar gases. 4,608,060, Cl. 55-16.000.

Kumabe, Junichiro; and Kumabe, Masaru, to Kumabe, Masaru. Tool for exodontia. 4,608,019, Cl. 433-118.000.

Kumabe, Masaru: *See*—
Kumabe, Junichiro; and Kumabe, Masaru, 4,608,019, Cl. 433-118.000.

Kummer, David A., to International Business Machines Corporation. Memory paging system in a microcomputer. 4,608,632, Cl. 364-200.000.

Kuno, Hiroshi: *See*—
Ueno, Hideo; Kuno, Hiroshi; and Hamabe, Yoshifumi, 4,607,966, Cl. 400-63.000.

Kupfer, Hans; and Hafke, Carl, to Metallgesellschaft Aktiengesellschaft. Method of operating a reactor for gasifying solid fuels. 4,608,059, Cl. 48-197.00R.

Kurachi, Kazuto: *See*—
Kamigaichi, Hideyuki; Kurachi, Kazuto; Asano, Nobuyoshi; and Hanada, Tatsuo, 4,607,925, Cl. 354-63.000.

Kuraco Limited: *See*—
Higashino, Toshihiro; Mitsunaga, Hirofumi; Nakanishi, Takahiro; and Taya, Yoshihiro, 4,607,614, Cl. 126-299.00E.

Kurakin, Leonid I.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov,

Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

Kuraray Co., Ltd.: *See*—
Motoishi, Yasuo; Satoh, Kenji; and Ikari, Kyoichiro, 4,608,286, Cl. 428-35.000.

Kurby, Christopher N.: *See*—
Batlivala, Percy P.; and Kurby, Christopher N., 4,608,699, Cl. 375-5.000.

Kuroda, Masato; Tanaka, Yoshiro; and Wada, Norikazu, to Yamatake-Honeywell. Electromagnetic flowmeter. 4,607,533, Cl. 73-861.120.

Kurokawa, Takashi, to Canon Kabushiki Kaisha. Exhaust system for chemical vapor deposition apparatus. 4,608,063, Cl. 55-208.000.

Kuroki, Takashi: *See*—
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, 4,608,316, Cl. 428-446.000.

Kurosawa, Masaji: *See*—
Kanamori, Nobutaka; and Kurosawa, Masaji, 4,608,361, Cl. 502-232.000.

Kurt Wolf & Co. KG: *See*—
Andre, Wolfram K., 4,608,260, Cl. 426-233.000.

Kurtz, Stuart J.; Roberts, Ernest H.; and Lucchesi, Peter J., to Union Carbide Corporation. Process for reducing draw resonance in polymeric film. 4,608,221, Cl. 264-556.000.

Kurumizawa, Masao; Terui, Mitsuru; and Yamaguchi, Nobuyasu, to Ikeda Bussan Co., Ltd.; and Nichiei Industry Co., Ltd. Method and mold apparatus for molding a padding member. 4,608,213, Cl. 264-45.100.

Kurz, Otto: *See*—
Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,607,557, Cl. 83-687.000.

Kuwahara, Hiroshi: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.

Kuwahata, Takao; Manabe, Sohei; and Gonpei, Katsuhiro, to Kabushiki Kaisha Toshiba. Photoconductive target of the image pickup tube. 4,608,514, Cl. 313-386.000.

Kuzmin, Petr D.: *See*—
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Kwap, Theodore W.: *See*—
Klara, Walter S.; Kwap, Theodore W.; Marcello, Victor; and Rasmussen, Robert A., 4,608,669, Cl. 365-201.000.

Kwolek, Stephanie L.: *See*—
Sweeny, Wilfred; and Kwolek, Stephanie L., 4,608,427, Cl. 528-179.000.

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Nakano, Yuji; Kamiyama, Kazushi; and Kobayashi, Tatuo, 4,608,307, Cl. 428-402.000.

Kyriss, Karl M.: *See*—
Yohe, Thomas L.; and Kyriss, Karl M., 4,608,163, Cl. 210-150.000.

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Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,607,557, Cl. 83-687.000.

Labbe, Francis A. M.: *See*—
Hinchcliffe, Dennis; Labbe, Francis A. M.; and Molins, Desmond W., 4,607,477, Cl. 53-444.000.

Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased (by Martin, Mary B., executrix), to American Cyanamid Company. Biologically pore culture of *Streptomyces majorciensis* Labeda. 4,608,343, Cl. 435-253.000.

LaBrash, Robert A.: *See*—
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,608,111, Cl. 156-306.600.

Lackinger, Franz. Tension resisting electrical cable gland. 4,608,454, Cl. 174-65.0SS.

Lacourse, Norman L.: *See*—
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,608,265, Cl. 426-582.000.

Laemmle, Joseph T.: *See*—
Tsai, Mei-Yuan; Jacoby, John E.; and Laemmle, Joseph T., 4,607,679, Cl. 164-5.000.

Lahtinen, Pentti K. Procedure for manufacturing elongated glued beams. 4,608,106, Cl. 156-182.000.

Lai, Michael M., to Champion International Corporation. Moisture removal for stack gas monitor. 4,608,065, Cl. 55-269.000.

L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Karinthi, Pierre; Gardent, Maurice; Regnier, Colette; and Tuccella, Jean, 4,607,488, Cl. 62-45.000.

Lamb, John G.; and McHugh, Terence M., to Standard Telephones and Cables Public Limited Company. Manufacturing optical fibre. 4,608,276, Cl. 427-163.000.

Lamberty, Bernard J.: *See*—
Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., 4,608,572, Cl. 343-792.500.

Lamort, Jean-Pierre J., to E et M Lamort. Turbines for fiber separation. 4,607,802, Cl. 241-46.00B.

Lanam, Richard D.; and Robertson, Allen R., to Engelhard Corporation. Palladium metal base dental alloy. 4,608,229, Cl. 420-464.000.

Landane, Jack: *See*—
Pomaville, Ronald C.; and Landane, Jack, 4,607,678, Cl. 160-332.000.

Landes, Herwig: *See*—
Becker, Hans; and Landes, Herwig, 4,608,069, Cl. 62-26.000.

Landis, Geoffrey A., to Spire Corporation. Cross-grooved solar cell. 4,608,451, Cl. 136-256.000.

Landphair, Donald K.; and Salley, Gordon L., to Deere & Company. Foldable frame flexing hinge. 4,607,708, Cl. 172-776.000.

Landstingens Inkopscentral LIC: *See*—
Schroder, Mats, 4,608,054, Cl. 623-39.000.

Lane, John: *See*—
DiMartini, Carl; and Lane, John, 4,608,230, Cl. 420-566.000.

Lane, William C. De-watering pump. 4,607,999, Cl. 417-118.000.

Lang, Gerard: *See*—
Jacquet, Bernard; and Lang, Gerard, 4,608,250, Cl. 424-71.000.

Larkin, Francis C.: *See*—
Sherman, William, III; Larkin, Francis C.; and Horvath, Stephen J., 4,608,704, Cl. 377-8.000.

Larkin, Mark E., to Abbott Laboratories. I.V. fluid storage and mixing system. 4,608,043, Cl. 604-87.000.

Larsen, Jens-Jorgen: *See*—
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.

Larsson, Lars E., to Santrade Limited. Rock drill bit. 4,607,712, Cl. 175-410.000.

Lassen, Frederich O., to Kimberly-Clark Corporation. Web with enhanced fluid transfer properties and method of making same. 4,608,292, Cl. 428-131.000.

Laszlo, Kalman. Method of making removable dentures. 4,608,020, Cl. 433-213.000.

Lauckner, Joachim: *See*—
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.

Laurent, Yves; and Verdier, Patrick, to Centre National de la Recherche Scientifique (CNRS). Neutron-absorbent glasses containing gadolinium and process for their preparation. 4,608,352, Cl. 501-73.000.

Laurer, Erwin: *See*—
Schabert, Hans-Peter; Heller, Max; Laurer, Erwin; and Leinweber, Hans, 4,607,822, Cl. 251-334.000.

Lauritzen, Nels J., to Johnson & Johnson Products, Inc. Unitary adhesive bandsage and package. 4,607,633, Cl. 128-156.000.

Lauvinerie, Jean-Pierre; and LeFeuvre, Annick, to Norton Christensen, Inc. Method of forming a diamond tooth insert for a drill bit and a diamond cutting element formed thereby. 4,608,226, Cl. 419-5.000.

LaValley Industrial Plastics, Inc.: *See*—
LaValley, Richard W., 4,608,170, Cl. 210-404.000.
LaValley, Richard W., 4,608,171, Cl. 210-404.000.

LaValley, Richard W., to LaValley Industrial Plastics, Inc. Angularly adjustable breaker valve-discharge elbow for rotary drum filters. 4,608,170, Cl. 210-404.000.

LaValley, Richard W., to LaValley Industrial Plastics, Inc. Adjustable mounting for valve-discharge elbow of rotary drum filters. 4,608,171, Cl. 210-404.000.

Law, Hsiang-Yi D.; and Rezek, Edward A., to TRW Inc. Integrated laser and field effect transistor. 4,608,696, Cl. 372-50.000.

Lawson, Randy J.: *See*—
Gonczy, Stephen T.; Lawson, Randy J.; and Rosen, Bruce I., 4,608,215, Cl. 264-56.000.

Lawson, Robert; Mason, Malcolm J.; and Maris, Peter I., to Baker Perkins Holdings PLC. Apparatus for sampling similar laminar articles. 4,607,536, Cl. 73-863.910.

Lawton, Rodney J., to Plessey Overseas Limited. FM detector with injection locked divider input circuit. 4,608,539, Cl. 329-103.000.

Laxo, Darryl E., to Chevron Research Company. Portable hard hat. 4,607,397, Cl. 2-410.000.

Lazear, Gregory D., to Conoco Inc. Minimum phase bandpass filtering of seismic signals. 4,608,673, Cl. 367-43.000.

Lazer, Edward S., to Boehringer Ingelheim Pharmaceuticals, Inc. Antiinflammatory 2-(trifluoroethylsulfonyl)benzimidazoles. 4,608,381, Cl. 514-395.000.

Leahy, Robert J., to Hercules Incorporated. Method of minimizing untoward effect of contaminants, such as pitch, in the papermaking operation. 4,608,123, Cl. 162-146.000.

Leber, Leland C.; and Swigert, David, to Teledyne Industries, Inc. Solenoid-actuated hygienic appliance. 4,607,627, Cl. 128-66.000.

LeBlanc, James C. Armored vehicle drive train. 4,607,562, Cl. 89-40.030.

Lechner, John F.: *See*—
Yoakum, George H.; Harris, Curtis C.; Korba, Brent E.; and Lechner, John F., 4,608,339, Cl. 435-172.200.

Lecinski, Frank H., to Continental White Cap, Inc. Anti-spin interference fit of press-seal insert and method of assembly. 4,607,757, Cl. 215-246.000.

Lee, Chi-Long: *See*—
Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., 4,608,396, Cl. 521-99.000.

Lee, James R.: *See*—
Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., 4,608,572, Cl. 343-792.500.

Lee, Roger K., to United States of America, Air Force. Very high speed lap with negative lift effect. 4,607,458, Cl. 51-119.000.

Lee, Young-Jin, to Union Carbide Corporation. Process for producing 2,5-dichloro-p-xylene. 4,608,448, Cl. 570-109.000.

Leech, Brad G.: *See—*
Bolton, Theodore S.; and Leech, Brad G., 4,607,500, Cl. 62-262.000.
LeFeuvre, Annick: *See—*
Lauvinerie, Jean-Pierre; and LeFeuvre, Annick, 4,608,226, Cl. 419-5.000.
Lefevre, Andrew P.: *See—*
Blomley, Peter F.; Arton, Kenneth A.; Whittaker, Edward J.; and Lefevre, Andrew P., 4,608,462, Cl. 179-81.00B.
Le Guillant, Daniel: *See—*
Bodin, Francois; Jouade , Pierre; and Le Guillant, Daniel, 4,607,828, Cl. 267-140.100.
Lehmann, Klaus. Roof cladding or similar building element allowing heat exchange with the environment and usable particularly as a solar energy collector. 4,607,616, Cl. 126-445.000.
Lehners, Ernst: *See—*
Brinkmann, Arnfried; and Lehners, Ernst, 4,607,725, Cl. 182-189.000.
Leichtfried, Friedrich: *See—*
Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, 4,607,859, Cl. 280-632.000.
Leigh-Monstevens, Keith V.: *See—*
Compton, David J.; Nix, Richard A.; and Leigh-Monstevens, Keith V., 4,607,670, Cl. 141-1.000.
Leinweber, Hans: *See—*
Schabert, Hans-Peter; Heller, Max; Laurer, Erwin; and Leinweber, Hans, 4,607,822, Cl. 251-334.000.
Leland Stanford, Junior University, The Board of Trustees of The: *See—*
Nightingale, John L.; Fejer, Martin M.; and Byer, Robert L., 4,607,776, Cl. 226-171.000.
LeMire, George J.: *See—*
Heinig, Charles F., Jr., 4,608,247, Cl. 424-16.000.
Lempicki, Alexander: *See—*
Sanford, Norman A.; Miniscalco, William J.; and Lempicki, Alexander, 4,607,916, Cl. 350-376.000.
Lenchin, Julianne M.: *See—*
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,608,265, Cl. 426-582.000.
Leonardo, Stephen V. Overbed table. 4,607,577, Cl. 108-144.000.
Lepper, Herbert; and Friesenhagen, Lothar, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of fatty acid esters of short-chain aliphatic alcohols from fats and/or oils containing free fatty acids. 4,608,202, Cl. 260-410.90R.
Lerman, Max. Dynamic post-operative hip abduction brace. 4,607,629, Cl. 128-80.00A.
LeSage, Richard; Reshanov, Eugene N.; and Schlemmer, Richard A., to International Safety Containers of Minnesota, Inc. Hot fat transporting container. 4,607,857, Cl. 280-47.260.
Levine, Peter A., to RCA Corporation. CCD floating-element output stages providing low reset noise with single sampling. 4,608,606, Cl. 358-213.000.
Levolor Lorentzen, Inc.: *See—*
Georgopoulos, George, 4,607,818, Cl. 248-544.000.
Levy, Roy J.: *See—*
Hirzel, Frederic J.; and Levy, Roy J., 4,608,702, Cl. 375-110.000.
Lew, Henry Y.; and Straus, Alan E., to Chevron Research Company. Process for the preparation of a low viscosity alkyl toluene or alkyl xylene sulfonate. 4,608,204, Cl. 260-505.00N.
Lewis, John C., Jr., to Tucel Industries, Inc. Molded brush block with integral squeegee. 4,607,411, Cl. 15-117.000.
Li, Thomas M.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,608,336, Cl. 435-7.000.
Lilley, Martin A., to Ampex Corporation. Circuit for reducing AFC offset error. 4,608,604, Cl. 358-188.000.
Lilly, A. Clifton, Jr.; Merritt, Henry B.; and Owens, Cassandra D., to Philip Morris Incorporated. Process for modifying the smoke flavor characteristics of tobacco. 4,607,646, Cl. 131-309.000.
Lin, Ju-Chui, to SCM Corporation. Silicone-polyester powder coating compositions. 4,608,421, Cl. 525-403.000.
Linde Aktiengesellschaft: *See—*
Bauer, Heinz; and Belloni, Aldo, 4,608,068, Cl. 62-18.000.
Becker, Hans; and Landes, Herwig, 4,608,069, Cl. 62-26.000.
Linden, Gunther, to Svenska Tobaks AB. Apparatus for packaging given quantities of snuff. 4,607,479, Cl. 53-530.000.
Linnau, Yendra: *See—*
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Littelfuse, Inc.: *See—*
Borzoni, John, 4,608,548, Cl. 337-201.000.
Lo, Kun N. Fixing device for a fishing rod. 4,607,975, Cl. 403-24.000.
Loch, Werner: *See—*
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,608,416, Cl. 525-130.000.
Lockett, Beverly: *See—*
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Loeb, Melvin: *See—*
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, 4,608,432, Cl. 528-274.000.
Loh, Ih-Houng; Cohen, Robert E.; and Baddour, Raymond F., to Massachusetts Institute of Technology. Thermal energy storage slurry material. 4,608,309, Cl. 428-409.000.
Lohr & Bromkamp GmbH: *See—*
Welschof, Hans-Heinrich; and Dries, Edgar, 4,608,028, Cl. 464-145.000.
Lokken, Oddvin, to Dento-Med Industries Incorporated. Denture adherent powder. 4,608,088, Cl. 106-35.000.
Lopez, Denis: *See—*
Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, 4,608,411, Cl. 524-533.000.
Lopez-Ramos, Hector: *See—*
Villarreal-Trevino, Juan A.; Zendejas-Martinez, Eugenio; and Lopez-Ramos, Hector, 4,608,240, Cl. 423-230.000.
L'Oreal: *See—*
Handjani, Rose-Marie; Ribier, Alain; and Maurelli, Manlio M., 4,608,211, Cl. 264-4.600.
Los, Marinus, to American Cyanamid Company. Imidazolidinones, and imidazolidienthiones, process and intermediates for the preparation thereof, and use of said compounds as herbicidal agents. 4,608,079, Cl. 71-92.000.
Los, Marinus, to American Cyanamid Company. Preparation of imidazolinyl benzoic acids. 4,608,437, Cl. 548-301.000.
Louis, Jean-Paul: *See—*
Bizot, Henri; Brasselet, Gery-Charles J.; Louis, Jean-Paul; and Narcy, Georges, 4,608,480, Cl. 219-121.0LK.
Lowery, Patrick A.: *See—*
Caldwell, John E.; Chapman, Michael R.; Goodwin, Kenneth J.; and Lowery, Patrick A., 4,608,220, Cl. 264-510.000.
Lozano, Rudy: *See—*
Carney, Joseph H.; and Lozano, Rudy, 4,607,664, Cl. 138-89.000.
LRC Products Limited: *See—*
Jarvis, Sidney H., 4,607,474, Cl. 53-117.000.
Luccarelli, Domenick, Jr.: *See—*
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, 4,608,193, Cl. 252-522.00R.
Lucchesi, Peter J.: *See—*
Kurtz, Stuart J.; Roberts, Ernest H.; and Lucchesi, Peter J., 4,608,221, Cl. 264-556.000.
Lue, Tom F.: *See—*
Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., 4,607,639, Cl. 128-419.00E.
Lueders, Arthur: *See—*
Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., 4,607,868, Cl. 285-332.000.
Luly, Robert A. Collapsible parabolic reflector. 4,608,571, Cl. 343-781.00P.
Lundberg, Robert D.: *See—*
Peiffer, Dennis G.; and Lundberg, Robert D., 4,608,425, Cl. 526-241.000.
Luscalu, Romeo: *See—*
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.
Lutz, Felix: *See—*
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.
Lynch, James, to Singer Company, The. Signature analyzer card. 4,608,691, Cl. 371-25.000.
M/A-COM Linkabit, Inc.: *See—*
Paik, Woo H.; Heller, Jerrold A.; and Walker, Gordon K., 4,608,456, Cl. 179-1.50S.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Uttenthaler, Josef, 4,607,714, Cl. 180-68.100.
MacDermid, Incorporated: *See—*
Kukanskis, Peter E.; Grunwald, John J.; and Sawoska, David, 4,608,275, Cl. 427-98.000.
Machii, Katsumasa: *See—*
Matsushita, Takenobu, 4,607,985, Cl. 405-284.000.
Machines Chambon S.A.: *See—*
Hodges, William D., 4,607,995, Cl. 414-46.000.
MacInnis, Martin B.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., 4,608,084, Cl. 75-101 00R.
MacKenzie, Ross A., to New Zealand Government Property Corporation. Method and apparatus for producing a puffed foodstuff. 4,608,261, Cl. 426-242.000.
Magar, Surendar S.: *See—*
Caudel, Edward R.; Magar, Surendar S.; and Gass, Wanda K., 4,608,634, Cl. 364-200.000.
Magdo, Ingrid E.: *See—*
Goth, George R.; Magdo, Ingrid E.; and Malaviya, Shashi D., 4,608,589, Cl. 357-34.000.
Maglecic, Steven C. Apparatus for packaging bulk materials composed of elongated pieces. 4,607,478, Cl. 53-502.000.
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, to Stepan Company. Self-compatibilizing polyester polyol blends based on polyalkylene terephthalate. 4,608,432, Cl. 528-274.000.
Maguire, Helen A.: *See—*
Maguire, Hugh P.; and Maguire, Helen A., 4,607,848, Cl. 273-269.000.
Maguire, Hugh P.; and Maguire, Helen A. Word game involving the use of mosaic score and strategy boards. 4,607,848, Cl. 273-269.000.
Mah, Frederick. Digital bottle opener. 4,607,543, Cl. 81-3.090.
Makino, Akihiro; and Mukasa, Koichi, to Alps Electric Co., Ltd. Ni-Fe magnetic head including 1.5-2% Ta. 4,608,228, Cl. 420-459.000.
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, to United States of America, Navy. Low perturbation electron injector for cyclic accelerators. 4,608,537, Cl. 328-237.000.

Makrides, Nicholas; and Stephenson, Earle W., to Kennametal Inc. Casting having wear resistant compacts and method of manufacture. 4,608,318, Cl. 428-553.000.

Malagari, Frank A., Jr., to Allegheny Ludlum Steel Corporation. Method of producing thin gauge oriented silicon steel. 4,608,100, Cl. 148-111.000.

Malaviya, Shashi D.: *See*—
Goth, George R.; Magdo, Ingrid E.; and Malaviya, Shashi D., 4,608,589, Cl. 357-34.000.

Mallinson, Andrew M., to Ferranti plc. Constant voltage circuits. 4,608,529, Cl. 323-275.000.

Mallipudi, Narayana M.; and Hollingshaus, John G., to American Cyanamid Company. Combating insects with certain 2,3-dihydro-2,2-dimethyl-7-benzofuranyl N-oxalyl-N-methyl carbamates. 4,608,371, Cl. 514-186.000.

Mamine, Takayoshi: *See*—
Oda, Tatsuji; Mamine, Takayoshi; and Yoneyama, Osamu, 4,608,695, Cl. 372-45.000.

Manabe, Sohei: *See*—
Kuwahata, Takao; Manabe, Sohei; and Gonpei, Katsuhiro, 4,608,514, Cl. 313-386.000.

Manheimer, Wallace: *See*—
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, 4,608,537, Cl. 328-237.000.

Mani, Krishnamurthy N.: *See*—
Chlanda, Frederick P.; and Mani, Krishnamurthy N., 4,608,141, Cl. 204-182.500.

Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, to Sony/Tektronix Corporation. Method and apparatus for testing probe calibration. 4,608,657, Cl. 364-571.000.

Mansbridge, Martin H.; and Norton, John, to British Aerospace PLC. Stiffened panel with apertures. 4,607,783, Cl. 228-265.000.

Manservisi, Renato; and Bagnaresi, Bruno, to SASIB S.p.A. Device for forming groups of cigarettes in packaging machines. 4,607,475, Cl. 53-150.000.

Marabella, Charles P., to Mead Corporation, The. Method for producing microcapsules and photosensitive microcapsules produced thereby. 4,608,330, Cl. 430-138.000.

Marcello, Victor: *See*—
Klara, Walter S.; Kwap, Theodore W.; Marcello, Victor; and Rasmussen, Robert A., 4,608,669, Cl. 365-201.000.

Marchal, Daniel: *See*—
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Marco Manufacturing, Inc.: *See*—
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Marino, James P.: *See*—
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Maris, Peter I.: *See*—
Lawson, Robert; Mason, Malcolm J.; and Maris, Peter I., 4,607,536, Cl. 73-863.910.

Mark, Victor; and Campbell, John R., to General Electric Company. Polycarbonate exhibiting improved heat resistance from diphenol containing disubstituted phenylene radical. 4,608,430, Cl. 528-196.000.

Markarian, Khristofor A.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Viliary B., 4,607,796, Cl. 241-3.000.

Markisen, Claus: *See*—
Clauss, Ulrich, 4,607,676, Cl. 160-74.000.

Marshall, John, to BOC Group, plc, The. Permanent gas refrigeration method. 4,608,067, Cl. 62-9.000.

Martin, H. Lee; and Killough, Stephen M., to United States of America, Energy. Electromechanical actuator for the tongs of a servomanipulator. 4,608,526, Cl. 318-628.000.

Martin, John F.: *See*—
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.

Martin, John H. E. J., deceased: *See*—
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.

Martin, Mary B., executrix: *See*—
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.

Martin, Robert W., to Union Carbide Corporation. Method of encapsulating finely divided solid particles. 4,608,401, Cl. 523-205.000.

Martin, Terrance S.: *See*—
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

Marton, Janet L.: *See*—
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.

Martus, Donald G. Stripped hex head drive socket. 4,607,547, Cl. 81-53.200.

Masand, Ravindra T.: *See*—
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

Mason, Malcolm J.: *See*—
Lawson, Robert; Mason, Malcolm J.; and Maris, Peter I., 4,607,536, Cl. 73-863.910.

Mason, Thomas A. Vehicle mounted long article carrying utility bracket with adjustable cross bar. 4,607,773, Cl. 224-42.45R.

Masprodenkoh Kabushikikaisha: *See*—
Sugiura, Toshihiro, 4,608,710, Cl. 455-4.000.

Massachusetts Institute of Technology: *See*—
Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,608,117, Cl. 156-610.000.
Kirtley, James L., Jr.; Sterling, Thomas L.; and Williams, Ronald D., 4,608,700, Cl. 375-36.000.
Loh, Ih-Houng; Cohen, Robert E.; and Baddour, Raymond F., 4,608,309, Cl. 428-409.000.

Massion, Philippe A. J., to S.P.R.L. LAMA P.V.B.A. Presentation device for textile products and the like. 4,607,771, Cl. 223-91.000.

Masuda, Toshiyuki: *See*—
Kojima, Yutaka; Masuda, Toshiyuki; and Hisamatsu, Nobuo, 4,608,561, Cl. 340-825.520.

Mateos, Adolfo: *See*—
Briolle, Emile; Hicter, Jean-Marie; and Mateos, Adolfo, 4,607,825, Cl. 266-215.000.

Mathis, Ernst: *See*—
Zwiener, Rudolf; Mathis, Ernst; Thalmann, Theo; and Rohrich, Siegfried, 4,607,666, Cl. 139-115.000.

Matkarimov, Suleiman K.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Viliary B., 4,607,796, Cl. 241-3.000.

Matrix Instruments Inc.: *See*—
Balasubramanian, N.; and Helgesson, Alan L., 4,608,578, Cl. 346-160.000.

Matson, Edsel D.: *See*—
Kangas, Vernon W.; Kangas, Roy J.; and Matson, Edsel D., 4,607,672, Cl. 144-2.00R.

Matsui, Hiroshi: *See*—
Sato, Yasushi; and Matsui, Hiroshi, 4,608,321, Cl. 428-632.000.

Matsuki, Hiroshi; and Sumiyoshi, Takao, to Suga Test Instruments Co., Ltd. Cycle sequence time/temperature controller. 4,607,790, Cl. 236-94.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Fujii, Takabumi; and Iijima, Takashi, 4,608,324, Cl. 429-194.000.
Kaneko, Akira; Fumoto, Teruo; and Nishida, Jun, 4,608,599, Cl. 358-113.000.
Shiomi, Yasufumi; and Yoshimura, Yoshikazu, 4,608,713, Cl. 455-325.000.
Sugawara, Norio; and Nawa, Motoyuki, 4,607,565, Cl. 98-40.240.
Yokobori, Nobuyoshi, 4,608,524, Cl. 318-254.000.

Matsushita Electric Works, Ltd.: *See*—
Kojima, Yutaka; Masuda, Toshiyuki; and Hisamatsu, Nobuo, 4,608,561, Cl. 340-825.520.

Matsushita, Takenobu, to Nozawa, Taizo; and Machii, Katsumasa, part interest to each. Block construction for preventing outflow of ballasts. 4,607,985, Cl. 405-284.000.

Matsuyama, Kouzou: *See*—
Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, 4,607,945, Cl. 355-14.00R.

Matsuyama, Yoshihiro; and Ishikawa, Takuma, to Minolta Camera Kabushiki Kaisha. Sheet sorter. 4,607,838, Cl. 271-293.000.

Matthews International Corporation: *See*—
Hancovsky, John P., 4,607,417, Cl. 27-1.000.

Mattingly, William B., to Personal Products Company. Sanitary napkin attachment means. 4,608,047, Cl. 604-387.000.

Mauranen, Pekka; and Vedenpaa, Timo, to Valmet Oy. Method for cutting a lead-in strip from a paper web in a paper machine. 4,608,124, Cl. 162-193.000.

Maurelli, Manlio M.: *See*—
Handjani, Rose-Marie; Ribier, Alain; and Maurelli, Manlio M., 4,608,211, Cl. 264-4.600.

Maurer, Richard P.: *See*—
Holtrop, James S.; and Maurer, Richard P., 4,608,104, Cl. 156-78.000.

Mauritz, Bernd; and Uhlig, Raimer, to Hilti Aktiengesellschaft. Expansion dowel assembly with a spherically shaped spreader. 4,607,992, Cl. 411-45.000.

Mauro, Grillini: *See*—
Ghedini, Luigi; Claudio, Rubbini; and Mauro, Grillini, 4,608,018, Cl. 433-88.000.

Mauser-Werke Oberndorf GmbH: *See*—
Krempel, Fritz, 4,607,549, Cl. 82-2.00E.

Maw, Bryan W.; and Brewer, Harold L., to University of Georgia Research Foundation, Inc., The. Seedling detector and ferret. 4,607,452, Cl. 47-1.00R.

Max-Planck-Gesellschaft: *See*—
Demus, Wolfgang; and Katterloher, Reinhard, 4,607,492, Cl. 62-55.500.

Mayer, Josef: *See*—
Burghardt, Wilfried; Ernst, Hans-Hellmut; and Mayer, Josef, 4,607,805, Cl. 242-107.40A.

Mayo Foundation: *See*—
Morrey, Bernard F.; and Chao, Edmund Y. S., 4,608,055, Cl. 623-23.000.

Mazanec, Terry J.; Goeden, Gary V.; and Frye, John G., Jr., to Standard Oil Company, The. Process for the production of alcohols. 4,608,447, Cl. 568-902.000.

Mazda Motor Corporation: *See—*
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.

Mazeau, Jean P.: *See—*
Boudot, Jean E.; and Mazeau, Jean P., 4,608,351, Cl. 501-62.000.

Mazhar, Mike S. Truck headrest. 4,607,886, Cl. 297-410.000.

McAdams, John B.: *See—*
Fritch, Charles D.; and McAdams, John B., 4,607,622, Cl. 128-6.000.

McCollum, Gregory J., to PPG Industries, Inc. Process for preparing lactam imides. 4,608,201, Cl. 540-529.000.

McCord, Wilfred M., Jr., to Vermont American Corporation. Dovetail fixture. 4,607,673, Cl. 144-144.50R.

McCusker, LeRoy H. Athletic/industrial brassiere with protective inserts. 4,607,640, Cl. 128-425.000.

McDowell, Hunter L., to Varian Associates, Inc. Cathode driven crossed-field amplifier. 4,608,520, Cl. 315-39.300.

McGinnis, Carolyn: *See—*
Pasternak, Gavril W., 4,608,376, Cl. 514-282.000.

McGirr, Kermit L. Detachable sunscreen for vehicle windows. 4,607,875, Cl. 296-97.00D.

McGurk, Joseph E.: *See—*
Wright, Steven F.; and McGurk, Joseph E., 4,607,761, Cl. 221-25.000.

McHugh, Terence M.: *See—*
Lamb, John G.; and McHugh, Terence M., 4,608,276, Cl. 427-163.000.

McIntosh, Bruce D.: *See—*
Nusbaumer, Kay T.; and McIntosh, Bruce D., 4,607,873, Cl. 294-88.000.

McIntosh, Robert H., to Interface Research Corporation. Carpet containing sanitizing compounds and methods. 4,608,289, Cl. 428-95.000.

McKay, Thomas H.: *See—*
Bell, Floyd R.; and McKay, Thomas H., 4,607,643, Cl. 128-715.000.

McKenzie, Thomas J. Electric wire connector. 4,607,902, Cl. 339-61.00R.

McNair, Bruce E., to Bell Telephone Laboratories, Incorporated. Processing of encrypted voice signals. 4,608,455, Cl. 178-22.170.

McNett, John P.: *See—*
Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, 4,608,025, Cl. 446-298.000.

McSorley, Harry J., Sr.; and Anthimides, Sophokles. Adjustable level. 4,607,437, Cl. 33-374.000.

McWhorter, David B.: *See—*
Watson, George H.; McWhorter, David B.; and Brown, Adrian, 4,608,126, Cl. 202-84.000.

Mead Corporation, The: *See—*
Marabella, Charles P., 4,608,330, Cl. 430-138.000.

Med-Tech Associates: *See—*
Jones, J. Paul, 4,607,766, Cl. 222-386.500.

Medtronic, Inc.: *See—*
Howard, William G.; and Berberick, David R., 4,608,322, Cl. 429-105.000.

Meek, Jan; Uittenbogaard, Maurice; and Michelsen, Finn C., to Heerema Engineering Service BV. Method of constructing an offshore tower structure. 4,607,983, Cl. 405-204.000.

Meeker, David M., to American Envelope Company. Mark locator. 4,607,433, Cl. 33-1.0BB.

Megles, John E., Jr.: *See—*
Beall, George H.; Megles, John E., Jr.; and Pinckney, Linda R., 4,608,348, Cl. 501-3.000.

Meier, Gunter, to Dorina Nahmaschinen GmbH. Sewing machine having a program carrier. 4,607,585, Cl. 112-454.000.

Meline, Harry R.; and Meyer, Richard A., to MTS Systems Corporation. Torsional-axial extensometer with additional restraint to limit unnecessary movements. 4,607,531, Cl. 73-794.000.

Menger, William M., to Houston Industries, Incorporated. Steam supply system for superposed turine and process chamber, such as coal gasification. 4,608,058, Cl. 48-73.000.

Mercurio, Domenic G.: *See—*
Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, 4,608,025, Cl. 446-298.000.

Merline Industries, Inc.: *See—*
Yealy, Carl F., 4,607,806, Cl. 242-117.000.

Merrick, Bruce C. Seat caddy for spectator seating. 4,607,881, Cl. 297-192.000.

Merritt, George W.: *See—*
Raftis, Spiros G.; and Merritt, George W., 4,607,663, Cl. 137-846.000.

Merritt, Henry B.: *See—*
Lilly, A. Clifton, Jr.; Merritt, Henry B.; and Owens, Cassandra D., 4,607,646, Cl. 131-309.000.

Merten, Gerhard; Steinkuhl, Bernd; and Hauschopp, Alois, to Gewerkschaft Eisenhutte Westfalia. Guides for mineral mining machines. 4,607,890, Cl. 299-43.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Schneider, Horst; and Hermann, Joachim, 4,607,560, Cl. 89-16.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Seidel, Albert; Neuking, Hartmut; and Blenninger, Ernst, 4,607,490, Cl. 62-51.000.

Metacon AG: *See—*
Tinnes, Bernhard; and Kreuzberg, Heinz, 4,607,681, Cl. 164-453.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Kupfer, Hans; and Hafke, Carl, 4,608,059, Cl. 48-197.00R.

Metex Corporation: *See—*
Usher, Peter P., 4,607,851, Cl. 277-1.000.

Metrikin, Vladimir S.: *See—*
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, to Societe Nationale Elf Aquitaine. Grafted ethylene polymers usable more especially as additives for inhibiting the deposition of paraffins in crude oils and compositions containing the oils and said additives. 4,608,411, Cl. 524-533.000.

Meyer, Albert; Hofmann, Hans; and Haferli, Hans, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Firing mechanism for an automatic firing weapon. 4,607,563, Cl. 89-132.000.

Meyer, Joao: *See—*
Desportes, Henri; and Meyer, Joao, 4,608,155, Cl. 209-224.000.

Meyer, Richard A.: *See—*
Meline, Harry R.; and Meyer, Richard A., 4,607,531, Cl. 73-794.000.

Meyer, Victor E.; and Dergazarian, Thomas E., to Dow Chemical Company, The. Inert monovalent hydrocarbon terminated polysulfide polymers. 4,608,433, Cl. 528-388.000.

Meyer, Victor E.: *See—*
Dorman, Linneaus C.; and Meyer, Victor E., 4,608,419, Cl. 525-329.900.

Meynell Valves Limited: *See—*
Bendall, Brian; and Flannery, Stephan W., 4,607,788, Cl. 236-12.200.

MG Industries: *See—*
Krongold, Martin A., 4,607,489, Cl. 62-49.000.

Mia, Abdus S., to Pitman-Moore, Inc. LHRH analogues useful in stimulating anti-LHRH antibodies and vaccines containing such analogues. 4,608,251, Cl. 424-85.000.

Michael, Kenneth L.: *See—*
Wiard, Maxwell R.; and Michael, Kenneth L., 4,607,684, Cl. 165-70.000.

Michel, Jean-Georges: *See—*
Dinger, Rudolf J.; and Michel, Jean-Georges, 4,608,510, Cl. 310-361.000.

Michels, Hartwig; and Klingler, Knud, to Delu-Luftkissentransportgeratetechnik GmbH. Proportional pneumatic control system for aircushions. 4,607,715, Cl. 180-118.000.

Michelsen, Finn C.: *See—*
Meek, Jan; Uittenbogaard, Maurice; and Michelsen, Finn C., 4,607,983, Cl. 405-204.000.

Micro Pure Systems, Inc.: *See—*
Neubauer, Werner G.; and Mingo, Jon J., 4,608,507, Cl. 310-335.000.

Micron Co., Ltd.: *See—*
Sadohara, Tsuyoshi, 4,608,017, Cl. 433-81.000.

Micronix Corporation: *See—*
Shimkunas, Alexander R., 4,608,268, Cl. 427-8.000.

Middlemiss, Robert J.: *See—*
Berstein, Patrick; Crinion, Jonathan; Middlemiss, Robert J.; and Oomen, Peter, 4,608,486, Cl. 235-380.000.

Middleton, Francisco A.: *See—*
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

Mihara, Teruyoshi, to Nissan Motor Co., Ltd. Vertical type MOS transistor. 4,608,584, Cl. 357-23.400.

Mikami, Mitsugu: *See—*
Kobayashi, Osamu; Yukimoto, Koji; and Mikami, Mitsugu, 4,607,650, Cl. 133-5.00R.

Mikhelashvili, Vissarion M.: *See—*
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Miki, Sadao: *See—*
Yoshida, Zenichi; and Miki, Sadao, 4,608,358, Cl. 502-164.000.

Miki, Yasuhiko: *See—*
Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, 4,608,657, Cl. 364-571.000.

Miksza, Anthony S., Jr.: *See—*
Kula, John; and Miksza, Anthony S., Jr., 4,607,636, Cl. 128-334.00R.

Mikuni Kogyo Kabushiki Kaisha: *See—*
Nakamura, Shigeyoshi, 4,608,209, Cl. 261-64.00E.

Milbar Corporation: *See—*
Anderson, J. Edward C., 4,607,548, Cl. 81-427.000.

Miles Italiana S.p.A.: *See—*
Fossati, Piero, 4,608,335, Cl. 435-12.000.

Miles Laboratories, Inc.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,608,336, Cl. 435-7.000.

Miller, Donald S., to British Hydromechanics Research Association, The. Fire monitors. 4,607,702, Cl. 169-25.000.

Miller, Irvin E., to V-Tech, Inc. Wet mount microscopic examination slide II. 4,607,921, Cl. 350-536.000.

Miller, John A.; and Athey, Roy L., to United Technologies Corporation. Method of producing turbine disks. 4,608,094, Cl. 148-11.50N.
Miller, Michael J.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., 4,608,084, Cl. 75-101.00R.
Miller, Stephen J., to Chevron Research Company. Process for producing high quality, high molecular weight microcrystalline wax derived from undewaxed bright stock. 4,608,151, Cl. 208-33.000.
Miller, Stephen J., to Chevron Research Company. Two-stage multiforming of olefins to tetramers. 4,608,450, Cl. 585-517.000.
Miller, Thomas E. Waterproof quick match and apparatus and method of forming same. 4,608,113, Cl. 156-438.000.
Mills, David; Kington, Alan D.; and Close, Rodney J., to Rolls-Royce Limited. Method and mould for casting metal articles. 4,607,680, Cl. 164-134.000.
Mims, Bruce L., to Contact Systems, Inc. Method and apparatus for soldering electrical components to circuit boards. 4,607,782, Cl. 228-180.200.
Minai, Masayoshi; and Katsura, Tadashi, to Sumitomo Chemical Company, Limited. Process for preparing 4-hydroxy-2-cyclopentenones. 4,608,442, Cl. 568-346.000.
Minami, Koji, to Sanyo Electric Co., Ltd. Electrostatic recording apparatus. 4,607,937, Cl. 355-3.00R.
Mingo, Jon J.: *See—*
Neubauer, Werner G.; and Mingo, Jon J., 4,608,507, Cl. 310-335.000.
Miniscalco, William J.: *See—*
Sanford, Norman A.; Miniscalco, William J.; and Lempicki, Alexander, 4,607,916, Cl. 350-376.000.
Minnesota Mining and Manufacturing Company: *See—*
Collins, Leslie M., 4,607,808, Cl. 242-192.000.
Geisler, Thomas C., 4,608,329, Cl. 430-110.000.
Schwartz, Thomas W., 4,607,464, Cl. 51-362.000.
Van Kampen, Craig L.; and Hockert, Eric N., 4,608,052, Cl. 623-22.000.
Minns, Richard A.: *See—*
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,608,429, Cl. 528-194.000.
Minolta Camera Kabushiki Kaisha: *See—*
Ishii, Kenjiro; Aragaki, Masaharu; Kato, Osami; and Higashi, Masato, 4,607,950, Cl. 355-41.000.
Matsuyama, Yoshihiro; and Ishikawa, Takuma, 4,607,838, Cl. 271-293.000.
Oka, Tateki, 4,608,327, Cl. 430-54.000.
Yuasa, Yoshio; Naruse, Kazuhiko; and Inaba, Masahito, 4,608,522, Cl. 315-241.00P.
Minor, Richard G.; and Polischuk-Sawtschenko, Alexander, to International Business Machines Corp. Address personalization of a remotely attached device. 4,608,562, Cl. 340-825.590.
Mita Industrial Co., Ltd.: *See—*
Koyama, Haruo; and Nishino, Toshio, 4,607,942, Cl. 355-3.0SH.
Miyakawa, Nobuhiro, Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, 4,607,936, Cl. 355-3.0DR.
Watashi, Masahiro; Kimura, Hiroshi; Shibata, Kivoshi; Hisajima, Masahiko; and Yamamoto, Kiyonori, 4,607,734, Cl. 192-67.00R.
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.
Mita Kogyo Kabushiki Kaisha: *See—*
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.
Mitchell, John W., Jr., to Burroughs Corporation. Heat sink for integrated circuit package. 4,607,685, Cl. 165-80.300.
Mitel Corporation: *See—*
Barsellotti, John A., 4,608,686, Cl. 370-69.100.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Kobayashi, Minoru, 4,608,138, Cl. 204-129.300.
Komurasaki, Satoshi, 4,607,602, Cl. 123-425.000.
Morishita, Mitsuharu; and Kouge, Shinichi, 4,608,639, Cl. 364-424.000.
Oogaki, Kenji, 4,608,648, Cl. 364-483.000.
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, 4,607,721, Cl. 181-249.000.
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusoaki, 4,607,722, Cl. 181-252.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Sugimoto, Tamio; Fukazawa, Yoshimitsu; and Yamaguchi, Kunio, 4,608,001, Cl. 418-55.000.
Mitsui, Tsutomu: *See—*
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, 4,608,535, Cl. 324-244.000.
Mitsunaga, Hirofumi: *See—*
Higashino, Toshihiro; Mitsunaga, Hirofumi; Nakanishi, Takahiro; and Taya, Yoshihiro, 4,607,614, Cl. 126-299.00E.
Miu, Ming T.: *See—*
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.
Miura, Kenji, to Kabushiki Kaisha Toshiba. Automatic transfer transaction processing apparatus. 4,608,485, Cl. 235-379.000.
Miura, Masakatsu; and Inuzuka, Takeshi, to Aisin-Warner Kabushiki Kaisha. Automatic transmission. 4,607,541, Cl. 74-758.000.
Miura, Tetsuji: *See—*
Kitsunai, Tomoyuki; Miura, Tetsuji; and Yagi, Norio, 4,608,414, Cl. 525-71.000.
Miyaji, Yoshimori; Fujiki, Hirokazu; and Takahashi, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Color television camera apparatus with self-diagnosis function. 4,608,593, Cl. 358-10.000.
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, to Mita Industrial Co., Ltd. Electrophotographic apparatus comprising photosensitive layer of amorphous silicon type photoconductor. 4,607,936, Cl. 355-3.0DR.
Miyake, Izumi, to Fuji Photo Film Co., Ltd. Tracking apparatus for rotary magnetic recording medium. 4,608,613, Cl. 360-78.000.
Miyamoto, Masao: *See—*
Ishimaru, Hajime; Miyamoto, Masao; and Komaki, Shojiro, 4,607,491, Cl. 62-55.500.
Miyamoto, Shoji: *See—*
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 4,608,525, Cl. 318-568.000.
Miyamoto, Takashi, to NEC Corporation. Semiconductor device provided with a package for a semiconductor element having a plurality of electrodes to be applied with substantially same voltage. 4,608,592, Cl. 357-80.000.
Miyasaka, Eiji, to Dainippon Screen Mfg. Co., Ltd. Copying machine. 4,607,836, Cl. 271-272.000.
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, to Agency of Industrial Science and Technology. Vaned stirrer for use in high temperature atmosphere. 4,607,959, Cl. 366-343.000.
Mizuguchi, Osamu: *See—*
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.
Mobay Corporation: *See—*
Rosthauser, James W., 4,608,304, Cl. 428-378.000.
Mobil Oil Corporation: *See—*
Blair, Ron B., 4,608,554, Cl. 340-347.0DD.
Chu, Pochen, 4,608,355, Cl. 502-68.000.
Dickert, Joseph J., Jr.; and Heilweil, Israel J., 4,608,182, Cl. 252-8.512.
Weber, Stevan L., 4,607,695, Cl. 166-272.000.
Mochida, Ei: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,608,253, Cl. 424-94.000.
Mochida Pharmaceutical Co., Ltd.: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,608,253, Cl. 424-94.000.
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Reheating device of steam power plant. 4,607,689, Cl. 165-110.000.
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, to Kawasaki Steel Corporation. Surface-treated steel strips adapted for electric resistance welding. 4,608,320, Cl. 428-629.000.
Modic, Frank J.: *See—*
Eckberg, Richard P.; Striker, Richard A.; and Modic, Frank J., 4,608,312, Cl. 428-419.000.
Moeller, Hinrich: *See—*
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.
Mohring, Edgar; Wagner, Kuno; and Muller, Hanns P., to Bayer Aktiengesellschaft. Process for the preparation of low molecular weight polyhydroxyl compounds. 4,608,446, Cl. 568-863.000.
Molex Incorporated: *See—*
Wright, Steven F.; and McGurk, Joseph E., 4,607,761, Cl. 221-25.000.
Molins, Desmond W.: *See—*
Hinchcliffe, Dennis; Labbe, Francis A. M.; and Molins, Desmond W., 4,607,477, Cl. 53-444.000.
Molins PLC: *See—*
Hinchcliffe, Dennis; Labbe, Francis A. M.; and Molins, Desmond W., 4,607,477, Cl. 53-444.000.
Moller, Craig A.; and Wolter, Eric H., to Abar Ipsen Industries. Electric heat treating furnace with quickly serviceable heating assembly components. 4,608,698, Cl. 373-130.000.
Molnlycke AB: *See—*
Hanssen, Carl-Otto, 4,607,631, Cl. 128-132.00D.
Nordqvist, Percy; and Hylerstedt, Erik, 4,608,044, Cl. 604-290.000.
Monarch Marking Systems, Inc.: *See—*
Pou, Frederick M.; and Straub, Richard L., 4,607,572, Cl. 101-426.000.
Monsanto Company: *See—*
Hill, Dale E., 4,608,095, Cl. 148-33.000.
Hill, Dale E., 4,608,096, Cl. 148-33.000.
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Morey, John. Vibration analysis. 4,607,529, Cl. 73-660.000.
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Payne, Roger E.; and Weeks, James B., 4,607,892, Cl. 305-56.000.
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Bai, Monty W., 4,608,468, Cl. 200-61.45R.
Batlivala, Percy P.; and Kurby, Christopher N., 4,608,699, Cl. 375-5.000.
Fedde, Chris S., 4,608,712, Cl. 455-166.000.
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Mohring, Edgar; Wagner, Kuno; and Muller, Hanns P., 4,608,446, Cl. 568-863.000.
Muller, Patrick, to Automotive Products plc. Friction clutch cover assemblies. 4,607,738, Cl. 192-109.00R.
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Salm, Franz; Zangerle, Eduard; and Muriset, Jean-Fracois, 4,607,988, Cl. 407-114.000.
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Murphy, Glenn M. Egg-frying utensil. 4,607,569, Cl. 99-426.000.
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Nagao, Toshiaki; and Sukimoto, Yasuyuki, to Omron Tateisi Electronics, Co. Object temperature control device. 4,607,962, Cl. 374-103.000.
Nagasaki, Tatsuo; and Nakamura, Junichi, to Olympus Optical Company Limited. Focus detection method utilizing surface acoustic wave. 4,608,490, Cl. 250-201.000.
Nagashima, Hideyuki: *See*—
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Nagashima, Kunio; and Kondo, Michikazu, to NEC Corporation. Optical time-division switching system employing optical bistable devices. 4,608,682, Cl. 370-4.000.
Nagataki, Motoi; and Inagaki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,607,718, Cl. 180-226.000.
Nagaura, Yoshiaki. Method of holding and polishing a workpiece. 4,607,496, Cl. 62-64.000.
Nagayama, Hiroshi, to Hitachi, Ltd. High-alumina refractory for use in non-ferrous metal melting furnace. 4,608,353, Cl. 501-97.000.
Nagel, Klaus, to Siemens Aktiengesellschaft. Multiprocessor memory system employing data transfer system. 4,608,629, Cl. 364-200.000.
Nagumo, Masahide; Kojima, Tadashi; and Inagawa, Jun, to Kabushiki Kaisha Toshiba. Error correction circuit. 4,608,692, Cl. 371-37.000.
Naito, Masataka, to Canon Kabushiki Kaisha. Duplex recording method and apparatus for producing duplex printing from simplex original. 4,607,948, Cl. 355-24.000.
Nakahata, Kimio: *See*—
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.
Nakajima, Jun; and Morinaga, Shiceki, to Asahipen Corporation. Composition of modified chlorinated resins. 4,608,415, Cl. 525-111.500.

Nakakoji, Hisatada: *See*—
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Nakamura, Junichi: *See*—
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Nakamura, Kazuharu; and Nakanishi, Yutaka, to Toyotomi Kogyo Co., Ltd. Device for adjusting the vertical position of wick for oil burner. 4,608,010, Cl. 431-88.000.

Nakamura, Keiichi; and Horiuchi, Hideyuki, to Tandy Corporation. Telephone answering device. 4,608,459, Cl. 179-6.030.

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Nakamura, Mamoru: *See*—
Yogo, Kenji; Nakamura, Mamoru; and Nishio, Shigeru, 4,608,208, Cl. 261-39.00R.

Nakamura, Shigeyoshi, to Mikuni Kogyo Kabushiki Kaisha. Carbureter for internal combustion engine. 4,608,209, Cl. 261-64.00E.

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Nakanishi, Takahiro: *See*—
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Nakanishi, Tsugio: *See*—
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Nakao, Kouzo, to Queen Light of Electronic Industries Ltd. Seal tape sticking device. 4,608,114, Cl. 156-497.000.

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Nakayama, Masafumi, to Nissan Motor Company, Limited. Steering apparatus. 4,607,717, Cl. 180-141.000.

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Roe, William J.; and Perisho, Jacqueline L., 4,608,237, Cl. 423-122.000.

Namai, Akihiro: *See*—
Egawa, Akira; Kodaira, Takanori; and Namai, Akihiro, 4,607,932, Cl. 354-468.000.

Nangeroni, Robert J., to Polaroid Corporation. Pliant shield for protecting photographic processing liquid from ambient atmosphere. 4,607,928, Cl. 354-304.000.

Napadow, Stanley C., to Protectaire Systems Co. Multi-wash spray booth and method of capturing air borne particles. 4,608,064, Cl. 55-238.000.

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Burns, Carmen D., 4,607,779, Cl. 228-106.000.
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Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,608,265, Cl. 426-582.000.

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Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

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Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

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Naylor, Gary R.: *See*—
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NCR Corporation: *See*—
Porter, Warren W., 4,608,621, Cl. 361-428.000.
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NEC Corporation: *See*—
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Nagashima, Kunio; and Kondo, Michikazu, 4,608,682, Cl. 370-4.000.
Shigaki, Seiichiro, 4,608,683, Cl. 370-13.000.

Neefe, Charles W.; and Proctor, Don R. Method for preloading bearings for a spin casting apparatus. 4,607,428, Cl. 29-436.000.

Nees, Stephan. Method of growing a confluent layer of cells on a porous or semi-permeable substrate and apparatus for practicing the method. 4,608,342, Cl. 435-240.000.

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Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

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Neptune Microfloc, Inc.: *See*—
Hsiung, Andrew K.; Eaton, George F.; and Hemphill, Brian W., 4,608,181, Cl. 210-786.000.

Neu, Werner, to Hansen-BTR GmbH. Membrane filter plate. 4,608,164, Cl. 210-231.000.

Neubauer, Werner G.; and Mingo, Jon J., to Micro Pure Systems, Inc. Damping device for focused piezoelectric transducer. 4,608,507, Cl. 310-335.000.

Neuer, David D., to RCA Corporation. Faceplate assembly having integral gauging means. 4,608,517, Cl. 313-477.00R.

Neukermans, Armand P.; Chiang, Kuo L.; Schwettmann, Frederic N.; and Bradbury, Donald R., to Hewlett-Packard Company. Silicon carbide film for X-ray masks and vacuum windows. 4,608,326, Cl. 430-5.000.

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Seidel, Albert; Neuking, Hartmut; and Blenninger, Ernst, 4,607,490, Cl. 62-51.000.

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Fukui, Kiyoshi, 4,608,549, Cl. 338-34.000.

New Holland Inc.: *See*—
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New Mexico Tech. Research Foundation: *See*—
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New Tech Oil, Inc.: *See*—
Trent, Robert H.; and Oakley, W. Ray, 4,607,888, Cl. 299-2.000.

New York Institute of Technology: *See*—
Williams, Lance; and Bloomenthal, Jules, 4,608,596, Cl. 358-81.000.

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MacKenzie, Ross A., 4,608,261, Cl. 426-242.000.

Newton, Jean M.; and Smith, William N., to CPG Products Corp. Figure wherein manipulation of one limb causes motion of another. 4,608,026, Cl. 446-330.000.

NGK Spark Plug Co., Ltd.: *See*—
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Niagara Blower Company: *See*—
Rowland, Jack T., 4,608,119, Cl. 159-3.000.

Nichias Corporation: *See*—
Kanamori, Nobutaka; and Kurosawa, Masaji, 4,608,361, Cl. 502-232,000.

Nichiei Industry Co., Ltd.: *See*—
Kurumizawa, Masao; Terui, Mitsuru; and Yamaguchi, Nobuyasu, 4,608,213, Cl. 264-45.100.

Nicholson, Warren H., to RCA Corporation. Television receiver using non-interlaced scanning format with motion compensation. 4,608,594, Cl. 358-11.000.

Nicol, Stuart, to Scottish & Newcastle Breweries PLC. Sealing cap for use in internal cleaning of can fillers. 4,607,853, Cl. 277-12.000.

Nielsen, Frese. Device for treatment of wounds in body tissue of patients by exposure to jets of gas. 4,608,041, Cl. 604-23.000.
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Nightingale, John L.; Fejer, Martin M.; and Byer, Robert L., to Leland Stanford, Junior University, The Board of Trustees of The. Apparatus for translating crystal fibers. 4,607,776, Cl. 226-171.000.
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Nijman, Aloysius J.; and Schoofs, Franciscus A. C. M., to U.S. Philips Corporation. Subscriber circuit for a telephone network. 4,608,461, Cl. 179-16.0AA.
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Nikolskie, Wadim G.: *See*—
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Nilssen, Ole K. Phase correction for series-resonant ballasts. 4,608,523, Cl. 315-244.000.
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Nippon Electric Co., Ltd.: *See*—
Watanabe, Takao, 4,608,708, Cl. 381-43.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Yokoshima, Minoru; Ohkubo, Tetsuo; and Kiyomoto, Masayuki, 4,608,400, Cl. 522-96.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Nomura, Hirokazu; Sugitani, Yuji; and Tamaoki, Naohiro, 4,608,481, Cl. 219-125.120.
Nippon Notion Kogyo Co., Ltd.: *See*—
Fukuroi, Takeo, 4,607,415, Cl. 24-94.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Gomi, Manabu; and Abe, Masanori, 4,608,142, Cl. 204-192.00M.
Nippon Telegraph & Telephone Public Corporation: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.
Nippon Telegraphy and Telephone: *See*—
Tamamura, Toshiaki; Niwa, Osamu; Hikita, Makoto; and Sugita, Akio, 4,608,129, Cl. 204-18.100.
Nippondenso Co., Ltd.: *See*—
Takeo, Yuji; and Yoshimi, Tomohisa, 4,608,551, Cl. 340-53.000.
Nishi, Hitoshi; Izumi, Asahiro; and Nishiyama, Sadanobu, to Ishida Scales Mfg. Co., Ltd. Distributing table construction for use in combinational weighing apparatus. 4,607,713, Cl. 177-25.000.
Nishida, Jun: *See*—
Kaneko, Akira; Fumoto, Teruo; and Nishida, Jun, 4,608,599, Cl. 358-113.000.
Nishida, Sumio: *See*—
Kisida, Hirosi; Hatakoshi, Makoto; and Nishida, Sumio, 4,608,389, Cl. 514-539.000.
Nishijima, Akio: *See*—
Sugihara, Isao; Nishijima, Akio; and Toriguchi, Michio, 4,608,244, Cl. 423-445.000.
Nishikawa, Kazuya: *See*—
Inaba, Hiroshi; and Nishikawa, Kazuya, 4,608,570, Cl. 343-704.000.
Nishimura, Toshio: *See*—
Nakanishi, Yasuhiro; and Nishimura, Toshio, 4,608,557, Cl. 340-715.000.
Nishimura, Yasuhiko: *See*—
Shimashita, Ishio; and Nishimura, Yasuhiko, 4,608,576, Cl. 346-49.000.
Nishino, Toshio: *See*—
Koyama, Haruo; and Nishino, Toshio, 4,607,942, Cl. 355-3.0SH.
Nishio, Shigeru: *See*—
Yogo, Kenji; Nakamura, Mamoru; and Nishio, Shigeru, 4,608,208, Cl. 261-39.00R.
Nishitani, Hiroshi: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.
Nishiyama, Sadanobu: *See*—
Nishi, Hitoshi; Izumi, Asahiro; and Nishiyama, Sadanobu, 4,607,713, Cl. 177-25.000.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Semiconductor device having non-saturating I-V characteristics and integrated circuit structure including same. 4,608,582, Cl. 357-22.000.
Nishizawa, Jun-ichi, to "Semiconductor Research Foundation" . Semiconductor optoelectro transducer. 4,608,587, Cl. 357-30.000.
Nishizawa, Shigeki; and Izawa, Tetsurou, to Hitachi, Ltd. Solid-state imaging system with smear suppression circuits. 4,608,608, Cl. 358-213.000.
Nissan, Alfred H.: *See*—
Klein, Edward P.; and Nissan, Alfred H., 4,608,122, Cl. 162-60.000.
Nissan Chemical Industries, Ltd.: *See*—
Watanabe, Yoshitane; Suzuki, Keitaro; and Suda, Susumu, 4,608,198, Cl. 252-609.000.
Nissan Motor Co., Ltd.: *See*—
Arima, Sumitsugu; Tsuda, Hiroshi; and Nagashima, Hideyuki, 4,607,539, Cl. 74-492.000.
Mihara, Teruyoshi, 4,608,584, Cl. 357-23.400.
Nakayama, Masafumi, 4,607,717, Cl. 180-141.000.
Shinzawa, Motohiro; and Hasegawa, Yoji, 4,608,640, Cl. 364-431.030.
Sugano, Kazuhiko, 4,607,542, Cl. 74-869.000.
Sugano, Kazuhiko, 4,607,731, Cl. 192-3.290.
Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, 4,608,656, Cl. 364-449.000.
Nissen, Rudolf F. Rotating gate valve. 4,607,820, Cl. 251-251.000.
Nitto Electric Industrial Co., Ltd.: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.
Nitto Kagaku Kogyo Kabushiki Kaisha: *See*—
Ohshima, Iwao; Narita, Takeshi; Handa, Ryoji; and Hosoda, Jun, 4,607,958, Cl. 366-192.000.
Niwa, Kuniyuki; and Fujimura, Yoshiyuki, to Toyoda Koki Kabushiki Kaisha. Numerical control system for a machine tool with a tool dimension compensation function. 4,608,645, Cl. 364-474.000.
Niwa, Osamu: *See*—
Tamamura, Toshiaki; Niwa, Osamu; Hikita, Makoto; and Sugita, Akio, 4,608,129, Cl. 204-18.100.
Nix, Richard A.: *See*—
Compton, David J.; Nix, Richard A.; and Leigh-Monstevens, Keith V., 4,607,670, Cl. 141-1.000.
Nobel, Karl-Ludwig: *See*—
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, 4,608,413, Cl. 524-591.000.
Noble, Peggy. Cover system. 4,607,674, Cl. 150-52.00R.
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Fungicidal N-phenylcarbamates. 4,608,385, Cl. 514-444.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic set-up system. 4,607,651, Cl. 134-62.000.
Nolan, James M., Jr.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.
Nomi, Haruo, to Junkosha Company Ltd. Water-vapor-pervious, optionally waterproof, heat insulating material. 4,608,299, Cl. 428-283.000.
Nomura, Hirokazu; Sugitani, Yuji; and Tamaoki, Naohiro, to Nippon Kokan Kabushiki Kaisha. Method of automatically controlling height of a weld bead. 4,608,481, Cl. 219-125.120.
Nonaka, Yuji: *See*—
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.
Nordholt, Ernst H.; and Boon, Cornelis A. M., to U.S. Philips Corporation. Oscillator circuit. 4,608,544, Cl. 331-109.000.
Nordqvist, Percy; and Hylerstedt, Erik, to Molnlycke AB. Compress for treatment of wounds. 4,608,044, Cl. 604-290.000.
Nordson Corporation: *See*—
Cobbs, Walter H., Jr.; Shong, Robert G.; and Rehman, William R., 4,608,398, Cl. 521-113.000.
Norman, Robert W., Jr.: *See*—
Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., 4,608,633, Cl. 364-200.000.
Norota, Kazuhiko: *See*—
Kobayashi, Nobuyuki; Ito, Toshimitsu; and Norota, Kazuhiko, 4,607,603, Cl. 123-492.000.
North States Industries, Inc.: *See*—
Bluem, Gary R.; Goodin, John W.; and Hickey, Larry G., 4,607,455, Cl. 49-55.000.
Northern Telecom Limited: *See*—
Jain, Prem C.; and Enns, Frederick, 4,608,685, Cl. 370-85.000.
Northrop Corporation: *See*—
Rowe, James M.; Kraatz, Paul; and Holmes, Samuel J., 4,608,272, Cl. 427-53.100.
Norton Christensen, Inc.: *See*—
Lauvinerie, Jean-Pierre; and LeFeuvre, Annick, 4,608,226, Cl. 419-5.000.
Radford, Steven R., 4,607,710, Cl. 175-249.000.
Norton, John: *See*—
Mansbridge, Martin H.; and Norton, John, 4,607,783, Cl. 228-265.000.
Norton, R. Scott. Stone digging attachment for front end loader attachment of a tractor. 4,607,441, Cl. 37-2.00R.
Norwalk Wastewater Equipment Company: *See*—
Graves, Jan D., 4,608,157, Cl. 210-86.000.
Nottingham-Spirk Design Inc.: *See*—
Hough, Wilfred H., 4,607,648, Cl. 133-3.00D.
Noutomi, Hiroshi: *See*—
Okuyama, Teiji; and Noutomi, Hiroshi, 4,608,637, Cl. 364-424.000.
Nozawa, Taizo: *See*—
Matsushita, Takenobu, 4,607,985, Cl. 405-284.000.
Nozawa, Yoshikuni, to Entac Company, Limited. Rotor/stator winding and method and apparatus for producing same. 4,607,803, Cl. 242-1.10R.

NPO Norplast: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

NRM Corporation: *See*—
Singh, Anand P.; Crumbacher, Thomas A.; Naylor, Gary R.; and Fagan, Thomas R., Jr., 4,608,219, Cl. 264-315.000.

NSK-Warner K.K.: *See*—
Yokote, Yoshihiro, 4,607,863, Cl. 280-804.000.

Nusbaumer, Kay T.; and McIntosh, Bruce D., to PHD, Inc. Gripper apparatus. 4,607,873, Cl. 294-88.000.

Nuttle, David A. Integral waste disposal system. 4,608,175, Cl. 210-532.200.

Nye, Derald D.: *See*—
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,608,664, Cl. 364-900.000.

Oakley, David J.; and Feld, Sam H., to United States of America, Energy. Welding fixture for nuclear fuel pin cladding assemblies. 4,607,778, Cl. 228-2.500.

Oakley, W. Ray: *See*—
Trent, Robert H.; and Oakley, W. Ray, 4,607,888, Cl. 299-2.000.

Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., to Nauchno-Proizvodstvennoe Obiedinenie Stroitelnogo I Dorozhnogo Mashinostroenia. Power steering assembly. 4,608,004, Cl. 418-206.000.

O'Brien, Thomas C.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.

Oce-Nederland B.V.: *See*—
Ensing, Hendrik; and Peulen, Jacobus H. M., 4,607,947, Cl. 355-15.000.

Oda, Tatsuji; Mamine, Takayoshi; and Yoneyama, Osamu, to Sony Corporation. Laser device formed with a stripe light emission region. 4,608,695, Cl. 372-45.000.

Odlin, Kenneth F. Lamp crushing machine. 4,607,798, Cl. 241-99.000.

Oerlikon-Boehringer GmbH: *See*—
Berbalk, Hermann, 4,607,550, Cl. 82-9.000.

Ogata, Hajime: *See*—
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, 4,608,320, Cl. 428-629.000.

Ogata, Yasuzi, to Olympus Optical Co., Ltd. Zoom lens system. 4,607,918, Cl. 350-426.000.

Ogawa, Ichitaro: *See*—
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

O'Har, George M.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.

Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, to Kajima Keneetus Kabushiki Kaisha. Heat storage device. 4,607,687, Cl. 165-104.190.

Ohbayashi, Gentaro; Umemoto, Susumu; and Hiramoto, Hiroo, to Toray Industries, Inc. Radiation sensitive polymer composition. 4,608,333, Cl. 430-281.000.

Ohio State University Research Foundation, The: *See*—
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Panthuvanich, Siriporn, 4,608,278, Cl. 427-213.350.

Ohkubo, Tetsuo: *See*—
Yokoshima, Minoru; Ohkubo, Tetsuo; and Kiyomoto, Masayuki, 4,608,400, Cl. 522-96.000.

Ohloff, Gunther: *See*—
Giersch, Wolfgang K.; Schulte-Elte, Karl H.; and Ohloff, Gunther, 4,608,445, Cl. 568-667.000.

Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, to Mochida Pharmaceutical Co., Ltd. Process for removing immune complex in blood by use of the immobilized pepsin. 4,608,253, Cl. 424-94.000.

Ohnishi, Taiji, to Intermatch S.A.; and K.K. Piem Riken. Piezoelectric igniter, especially for a cigarette lighter or the like. 4,608,508, Cl. 310-339.000.

Ohno, Jun-ichi; and Konishi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device. 4,608,668, Cl. 365-200.000.

Ohshima, Iwao; Narita, Takeshi; Handa, Ryoji; and Hosoda, Jun, to Nitto Kagaku Kogyo Kabushiki Kaisha. Apparatus for stirring hydrogel particles of water-soluble polymer. 4,607,958, Cl. 366-192.000.

Ohta, Kihachiro: *See*—
Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu, 4,608,127, Cl. 203-48.000.

Ohta, Masakatsu: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.

Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, to Kaken Pharmaceutical Co., Ltd. Imidazole derivatives. 4,608,438, Cl. 548-341.000.

Oishi, Kengo; and Ono, Tuyoshi, to Fuji Photo Film Co., Ltd. Magnetic recording disk cartridge. 4,608,617, Cl. 360-133.000.

Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Method of forming composite images. 4,608,327, Cl. 430-54.000.

Okabe, Takayuki: *See*—
Yamamoto, Haruyasu; and Okabe, Takayuki, 4,608,369, Cl. 514-144.000.

Okamuro, James A., to Borroughs Tool & Equipment Corporation. Gauge for measuring the tension in an elongate element. 4,607,535, Cl. 73-862.470.

Okazaki, Hiroshi: *See*—
Kazaoka, Kenichi; and Okazaki, Hiroshi, 4,607,827, Cl. 267-107.000.

Okazaki, Masaki, to Sanshin Kogyo Kabushiki Kaisha. Exhaust system for outboard motors. 4,607,723, Cl. 181-272.000.

Oki, Hiroshi, to Hitachi, Ltd. Electron tube having glass-to-metal-to-glass seal. 4,608,516, Cl. 313-477.00R.

Okino, Tadashi, to Canon Kabushiki Kaisha. Image sensing apparatus. 4,608,605, Cl. 358-209.000.

Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, to Japan Tobacco Inc. Shredded tobacco supplying device for cigarette making machine. 4,607,645, Cl. 131-109.100.

Okuyama, Teiji; and Noutomi, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Control device for driving road-vehicle electric-powered equipment. 4,608,637, Cl. 364-424.000.

Olds, Kerry J.: *See*—
Stants, Richard O.; and Olds, Kerry J., 4,607,588, Cl. 118-52.000.

Olsen, Robert W., to Construction Specialties, Inc. Panel wall system. 4,607,471, Cl. 52-509.000.

Olympus Optical Company Limited: *See*—
Nagasaki, Tatsuo; and Nakamura, Junichi, 4,608,490, Cl. 250-201.000.
Ogata, Yasuzi, 4,607,918, Cl. 350-426.000.

Omark Industries, Inc.: *See*—
Krampen, Adalbert A.; Ells, Delbert O.; Bjerke, Robert K.; and Ward, James P., 4,608,102, Cl. 149-92.000.

Omron Tateisi Electronics, Co.: *See*—
Nagao, Toshiaki; and Sukimoto, Yasuyuki, 4,607,962, Cl. 374-103.000.
Saito, Yashitane; Doi, Tetsuo; and Hirase, Kiyoto, 4,608,628, Cl. 364-141.000.
Sakamoto, Tamaki, 4,608,565, Cl. 340-870.170.

O'Neill, Michael L.: *See*—
Pendolino, Eugene F.; Edmondson, Wayne L.; and O'Neill, Michael L., 4,607,891, Cl. 299-92.000.

Ono, Tuyoshi: *See*—
Oishi, Kengo; and Ono, Tuyoshi, 4,608,617, Cl. 360-133.000.

Oogaki, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Data display system. 4,608,648, Cl. 364-483.000.

Oomen, Peter: *See*—
Berstein, Patrick; Crinion, Jonathan; Middlemiss, Robert J.; and Oomen, Peter, 4,608,486, Cl. 235-380.000.

Opelika Manufacturing Corporation: *See*—
Brocklehurst, Charles E., 4,607,582, Cl. 112-121.120.

Opsvik, Peter. Chair with saddle shaped seat and members externally transversely therefrom. 4,607,882, Cl. 297-195.000.

O'Riley, Henry M. Lighted sport article for hand tossing. 4,607,850, Cl. 273-424.000.

Ormond, A. Neuman. Analog to digital converter without zero drift. 4,608,553, Cl. 340-347.0NT.

Orndorff, Roy L., Jr.: *See*—
Kramer, James H.; and Orndorff, Roy L., Jr., 4,607,964, Cl. 384-98.000.

Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, to Mita Kogyo Kabushiki Kaisha. Automatic developing bias control device. 4,607,954, Cl. 355-14.00D.

Osaki, Sigemi: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.

Osgood, Richard M.: *See*—
Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,608,117, Cl. 156-610.000.

Ossenberg-Engels, Walter: *See*—
Dunker, Friedrich W.; and Ossenberg-Engels, Walter, 4,607,505, Cl. 66-117.000.

Osterberger, Larry D.: *See*—
Czerwinski, Richard W.; and Osterberger, Larry D., 4,608,418, Cl. 524-296.000.

Osterholm, Jewell L., to Thomas Jefferson University. Method and apparatus for tomographic diagnosis. 4,608,635, Cl. 364-414.000.

Osterloh, Rolf: *See*—
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,608,416, Cl. 525-130.000.

Ostman, Per H., to Ekono Oy. Process for continuous digestion of finely-divided material with heat capacity flows of substantially the same magnitude. 4,608,121, Cl. 162-19.000.

Ostrup, Leif: *See*—
Berggren, Anders; Rohman, Hakan; and Ostrup, Leif, 4,607,637, Cl. 128-334.00C.

Ota, Yoshihiko, to Victor Company of Japan. Color video signal recording and/or reproducing system using overlap recording of FM luminance signal over frequency converted carrier chrominance signal. 4,608,611, Cl. 358-328.000.

Otoshima, Hiroo, to Murata Kikai Kabushiki Kaisha. Fluid yarn splicing device. 4,607,482, Cl. 57-22.000.

Otsuka Kagaku Kabushiki Kaisha: *See*—
Endo, Yoshinori; and Takao, Hisashi, 4,608,367, Cl. 514-89.000.

Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, to Nitto Electric Industrial Co., Ltd.; and Toa Eiyo Ltd. Hydrophilic therapeutic material. 4,608,249, Cl. 424-28.000.

Ovshinsky, Stanford R.: *See*—
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Owens, Cassandra D.: *See*—
Lilly, A. Clifton, Jr.; Merritt, Henry B.; and Owens, Cassandra D., 4,607,646, Cl. 131-309.000.

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Hedler, Robert C.; Kohler, Robert D.; and Dunlap, John H., 4,608,709, Cl. 382-1.000.

Owens, Kevin A.: *See*—
Hickner, Richard A.; Owens, Kevin A.; and Grays, Gwendolyn M., 4,608,313, Cl. 428-414.000.

Owens, Robert M.: *See*—
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.

Oy Partek Ab: *See*—
Barsk, Jaakko O., 4,608,216, Cl. 264-70.000.

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Kluge, Arthur F.; Willis, Anthony L.; and O'Yang, Counde, 4,608,388, Cl. 514-510.000.

Ozeki, Toshiaki: *See*—
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, 4,607,689, Cl. 165-110.000.

Paek, Un C.; and Schroeder, Charles M., Jr., to AT&T Technologies, Inc. Modified zirconia induction furnace. 4,608,473, Cl. 219-10.49R.

Paik, Woo H.; Heller, Jerrold A.; and Walker, Gordon K., to M/A-COM Linkabit, Inc. Digital audio scrambling system with error conditioning. 4,608,456, Cl. 179-1.50S.

Paisley, Daniel J., to Deere & Company. Brake mechanism. 4,607,730, Cl. 188-170.000.

Pak, Chong-Il. Method and apparatus for removing integrated circuit chips from a flexible carrier. 4,607,744, Cl. 198-461.000.

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Keresztessy nee Badi, Maria; Paka nee Kas, Eleonora; Gyongyossy, Lajos; Farkas, Bela; and Paku, Sandor, 4,608,090, Cl. 106-272.000.

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Panczyk, Maurice A.: *See*—
Deram, Georges E.; and Panczyk, Maurice A., 4,607,862, Cl. 280-765.100.

Panthuvanich, Siriporn: *See*—
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Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

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Paper Converting Machine Company: *See*—
Ehlus, Dennis W.; and Williams, Patrick J., 4,607,473, Cl. 53-54.000.

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Parker, Edward J.; and Scott, Kenneth C., to BASF Corporation. Dishwashing composition. 4,608,188, Cl. 252-99.000.

Parker, Frederick S.: *See*—
Josephson, Elliot; and Parker, Frederick S., 4,608,625, Cl. 363-21.000.

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Hankes, Robert W.; and Parker, Lloyd H., 4,608,162, Cl. 210-150.000.

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Rudy, Michael; Cary, Paul; and Roth, Arthur A., to Filenet Corporation. Optical storage and retrieval device. 4,608,679, Cl. 369-36.000.

Rueger, William J.: *See—*
Rinkleib, Helfried O.; and Rueger, William J., 4,608,614, Cl. 360-95.000.

Rugis, John W.; and Drummond, Graham J., to Drummond and Relph Limited. Alcohol detection device. 4,607,719, Cl. 180-272.000.

Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, to Continental Gummi-Werke AG; and Fried. Krupp GmbH. Method for the vulcanization of pneumatic tires. 4,608,218, Cl. 264-315.000.

Rump, Joh. Moritz: *See—*
Dunker, Friedrich W.; and Ossenberg-Engels, Walter, 4,607,505, Cl. 66-117.000.

Runge, Harry V., to Flourocarbon Technologies, Inc. Fluoropolymer surface lubricant and coating. 4,608,282, Cl. 427-385.500.

Ruscitti, Tommaso, to S.A.R. S.p.A. Manually operated pump for the delivery under pressure of liquid substances. 4,607,765, Cl. 222-321.000.

Rushing, Allen J., to Eastman Kodak Company. Apparatus for controlling toner replenishment in electrographic copier. 4,607,944, Cl. 355-14.00D.

Russell, Frank S., to Sleeper & Hartley Corp. Wire working machine. 4,607,513, Cl. 72-137.000.

Rutten, Leon L. Projectile distributor for centrifugal launcher. 4,607,605, Cl. 124-6.000.

Ryerson & Haynes, Inc.: *See—*
Davis, Robert D., Jr., 4,607,406, Cl. 7-100.000.

S.A.R.L. Manufacture Francaise des Chaussures Eram: *See—*
Biotteau, Gerard, 4,608,287, Cl. 428-40.000.

S.A.R. S.p.A.: *See—*
Ruscitti, Tommaso, 4,607,765, Cl. 222-321.000.

S.N.E.C.M.A.: *See—*
Bizot, Henri; Brasselet, Gery-Charles J.; Louis, Jean-Paul; and Narcy, Georges, 4,608,480, Cl. 219-121.0LK.

S.P.R.L. LAMA P.V.B.A.: *See—*
Massion, Philippe A. J., 4,607,771, Cl. 223-91.000.

Sadate-Akhavi, Hossein: *See—*
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Sadohara, Tsuyoshi, to Micron Co., Ltd. Endodontic irrigating instrument. 4,608,017, Cl. 433-81.000.

Saffell, John R.: *See—*
Ibar, Jean P.; and Saffell, John R., 4,608,532, Cl. 324-73.00R.

Sagami Chemical Research Center: *See*—
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Sagara, Noriyasu: *See*—
Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, 4,607,687, Cl. 165-104.190.

Sah, Ramesh. Well plug quality testing. 4,607,694, Cl. 166-250.000.

Saijo, Yoshiaki: *See*—
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,607,651, Cl. 134-62.000.

Saischek, Gerald; and Bodingbauer, Hans, to Chemie Linz Aktiengesellschaft. 1,3,2-dioxaborinanes. 4,608,440, Cl. 556-7.000.

Saito, Takeshi, to Ricoh Company, Ltd. Removable developing unit for an electrostatic recording apparatus. 4,607,939, Cl. 355-3.0DD.

Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, to Sagami Chemical Research Center. Method of improving response characteristics of gas sensor using microwave spectrometer. 4,607,521, Cl. 73-23.000.

Saito, Yashitane; Doi, Tetsuo; and Hirase, Kiyoto, to Omron Tateisi Electronics Co. Programmable controller. 4,608,628, Cl. 364-141.000.

Sakai Chemical Industry Co., Ltd.: *See*—
Kanamori, Nobutaka; and Kurosawa, Masaji, 4,608,361, Cl. 502-232.000.

Sakai, Minoru: *See*—
Seike, Noboru; Teranishi, Masatoshi; and Sakai, Minoru, 4,607,619, Cl. 128-4.000.

Sakai, Noriyuki: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.

Sakamoto, Tamaki, to Omron Tateisi Electronics Co. Indoor/outdoor thermometer with remote sensing unit. 4,608,565, Cl. 340-870.170.

Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu. Dibenzofuran distillation and crystallization process. 4,608,127, Cl. 203-48.000.

Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, to Nitto Electric Industrial Co. Ltd.; and Mazda Motor Corporation. Composition for fixing metal powder molding at sintering. 4,608,225, Cl. 419-5.000.

Saleeba, Wallace T. Combination cart and boat boarding steps. 4,607,856, Cl. 280-47.180.

Salley, Gordon L.: *See*—
Landphair, Donald K.; and Salley, Gordon L., 4,607,708, Cl. 172-776.000.

Salm, Franz; Zangerle, Eduard; and Muriset, Jean-Fracois, to Herrli AG. Reversible cutting bit. 4,607,988, Cl. 407-114.000.

Samdor Engineering Limited: *See*—
Galper, Sam, 4,608,165, Cl. 210-232.000.

Sammells, Anthony F., to Texaco Inc. Means and method for the electrochemical reduction of carbon dioxide to provide a product. 4,608,132, Cl. 204-59.00R.

Samson, Marc: *See*—
Andrade, Juan; Prescher, Gunter; and Samson, Marc, 4,608,443, Cl. 568-454.000.

Sandco, Inc.: *See*—
Pierce, Bobby L., 4,607,837, Cl. 271-273.000.

Sandel, Frederick: *See*—
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, 4,608,537, Cl. 328-237.000.

Sando Iron Works, Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,607,508, Cl. 68-22.00R.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works, Ltd. Apparatus for applying treating solution to a cloth in continuous treatment of the cloth. 4,607,508, Cl. 68-22.00R.

Sanford, Norman A., to Polaroid Corporation. Method for modulating a carrier wave. 4,607,909, Cl. 350-96.140.

Sanford, Norman A.; Miniscalco, William J.; and Lempicki, Alexander, to GTE Laboratories Incorporated. Apparatus for controlling the rotation of the plane of linear polarization of linearly polarized radiant energy traversing an element of chromium chalcogenide spinel magnetic semiconductor with elliptically polarized radiant energy. 4,607,916, Cl. 350-376.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Okazaki, Masaki, 4,607,723, Cl. 181-272.000.

Santoni & C. S.p.A.: *See*—
Vincoli, Armando, 4,607,504, Cl. 66-24.000.

Santrade Limited: *See*—
Larsson, Lars E., 4,607,712, Cl. 175-410.000.

Sanyo Electric Co., Ltd.: *See*—
Awane, Misao; Hara, Seiji; and Kobayashi, Satoshi, 4,608,487, Cl. 235-383.000.
Minami, Koji, 4,607,937, Cl. 355-3.00R.

Sasaki, Hideaki: *See*—
Kobayashi, Mamoru; Sasaki, Hideaki; and Hara, Yasuhiko, 4,608,494, Cl. 250-461.100.

Sasaki, Hiroshi: *See*—
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.

Sasaki, Junichi, to Toshiba Kikai Kabushiki Kaisha. Programmable sequence controller. 4,608,661, Cl. 364-900.000.

Sasaki, Kazuya: *See*—
Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, 4,608,438, Cl. 548-341.000.

SASIB S.p.A.: *See*—
Manservisi, Renato; and Bagnaresi, Bruno, 4,607,475, Cl. 53-150.000.

Sato, Hirohiko: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.

Sato, Ryo: *See*—
Haga, Toru; Nagano, Eiki; Sato, Ryo; and Yoshida, Ryo, 4,608,080, Cl. 71-92.000.

Sato, Shinichi: *See*—
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,607,651, Cl. 134-62.000.

Sato, Yasushi; and Matsui, Hiroshi, to NGK Spark Plug Co., Ltd. Ceramic and metal composite body. 4,608,321, Cl 428-632.000.

Sato, Yukio, to Canon Kabushiki Kaisha. Data processing and transfer apparatus. 4,608,689, Cl. 371-15.000.

Satoh, Kenji: *See*—
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, 4,607,689, Cl. 165-110.000.
Motoishi, Yasuo; Satoh, Kenji; and Ikari, Kyoichiro, 4,608,286, Cl. 428-35.000.

Satonaka, Shinobu: *See*—
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.

Sauerberg, Per: *See*—
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.

Savolainen, Erkki: *See*—
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.

Sawicki, Thomas E.: *See*—
Ramsey, David A.; Rohe, Clair F.; and Sawicki, Thomas E., 4,608,489, Cl. 235-462.000.

Sawoska, David: *See*—
Kukanskis, Peter E.; Grunwald, John J.; and Sawoska, David, 4,608,275, Cl. 427-98.000.

Scaramucci, John P. Method for locking a bonnet to a valve body. 4,607,422, Cl. 29-157.10R.

Schaar, John, to Grand Slam Archery. Bow mounted quiver. 4,607,606, Cl. 124-89.000.

Schabert, Hans-Peter; Heller, Max; Laurer, Erwin; and Leinweber, Hans, to Kraftwerk Union Aktiengesellschaft. Shutoff valve with a conical valve seat. 4,607,822, Cl. 251-334.000.

Schaeffer, Bruce W.: *See*—
Brothers, Michael V.; and Schaeffer, Bruce W., 4,607,974, Cl. 403-24.000.

Schafer, Thomas B.; Sindelar, William, deceased (by Sindelar, Dorothy, legal representative); and Cummens, Joseph R., to Danly Machine Corporation. Transfer feed press with improved transfer feed system. 4,607,516, Cl. 72-405.000.

Schafsteller, Helmut, to Warner & Swasey Company, The. Linear position indicator. 4,608,654, Cl. 364-559.000.

Scharer, Roger M., to General Binding Corporation. Combined punch and binding machine with thickness gauge and back gauge plate adjustment. 4,607,993, Cl. 412-40.000.

Scheffer, Terry J.: *See*—
Amstutz, Hermann; Kaufmann, Meinolph; and Scheffer, Terry J., 4,608,558, Cl. 340-784.000.

Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., to GTE Products Corporation. Recovery of cobalt and chromium. 4,608,084, Cl. 75-101.00R.

Scheithauer, Richard A.: *See*—
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., 4,608,235, Cl. 423-53.000.

Schen, Michael A.: *See*—
Brown, James W.; Chen, Tsang J.; and Schen, Michael A., 4,608,424, Cl. 526-240.000.

Schenck, Robert R. Dynamic traction device. 4,607,625, Cl. 128-26.000.

Scheuring, Melvin W. Muzzle loader. 4,607,446, Cl. 42-90.000.

Schilling, Curtis L., Jr.; and Williams, Thomas C., to Union Carbide Corporation. Hydrosilyl-modified polycarbosilane precursors for silicon carbide. 4,608,242, Cl. 423-345.000.

Schirmer, Henry G., to W. R. Grace & Co., Cryovac Div. Oriented films from propylene copolymers and unplasticized saran. 4,608,302, Cl. 428-349.000.

Schlemmer, Richard A.: *See*—
LeSage, Richard; Reshanov, Eugene N.; and Schlemmer, Richard A., 4,607,857, Cl. 280-47.260.

Schlossberg, Howard: *See*—
Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,608,117, Cl. 156-610.000.

Schlumberger Technology Corporation: *See*—
Chow, Edward Y., 4,607,530, Cl. 73-708.000.
Richardson, Neil W., 4,607,693, Cl. 166-242.000.

Schmaehl, Dietrich: *See*—
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.

Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, to Kaltenbach & Voight GmbH & Co. Work station with suctioning device. 4,607,413, Cl. 15-301.000.
Schmidt, Richard A.: *See—*
Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., 4,607,639, Cl. 128-419.00E.
Schmitt, David A.: *See—*
Hansen, Robert C.; Richardson, Calvin J.; and Schmitt, David A., 4,608,688, Cl. 371-11.000.
Schnegelberger, Harald: *See—*
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.
Schnegg, Julius R., to Burlington Industries, Inc. Stable selvage intermediate for weft inserted warp knit draperies. 4,608,290, Cl. 428-101.000.
Schneider, Horst; and Hermann, Joachim, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for dynamically supporting a high stress structure. 4,607,560, Cl. 89-16.000.
Schnell, William J.: *See—*
Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., 4,607,868, Cl. 285-332.000.
Scholz, Hansjurgen: *See—*
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.
Schoofs, Franciscus A. C. M.: *See—*
Nijman, Aloysius J.; and Schoofs, Franciscus A. C. M., 4,608,461, Cl. 179-16.0AA.
Schott, Bernd, to Robert Bosch GmbH. Method and apparatus for transmitting data words asynchronously from one microprocessor to another in form of timing intervals. 4,608,630, Cl. 364-200.000.
Schreiber, William L.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,195, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,196, Cl. 252-522.00R.
Schroder, Mats, to Landstingens Inkopscentral LIC. Adjustable connection for connecting adjoining parts of an artificial limb. 4,608,054, Cl. 623-39.000.
Schroeder, Charles M., Jr.: *See—*
Paek, Un C.; and Schroeder, Charles M., Jr., 4,608,473, Cl. 219-10.49R.
Schroth, Carl G.; and Thorson, Russell E., to Kimberly-Clark Corporation. Revolving transfer roll. 4,608,115, Cl. 156-519.000.
Schubert, Hans A.; and Schulze, Klaus, to SMS HasenClever Maschinenfabrik GmbH. Forging press of underfloor design. 4,607,518, Cl. 72-453.120.
Schubert, Hiltmar: *See—*
Muller, Dietmar; and Schubert, Hiltmar, 4,608,210, Cl. 264-3.200.
Schulte-Elte, Karl H.: *See—*
Giersch, Wolfgang K.; Schulte-Elte, Karl H.; and Ohloff, Gunther, 4,608,445, Cl. 568-667.000.
Schulze, Klaus: *See—*
Schubert, Hans A.; and Schulze, Klaus, 4,607,518, Cl. 72-453.120.
Schumacher, Larry. Commutatorless d.c. electric motor. 4,608,505, Cl. 310-267.000.
Schumann, Roland, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Lengthwise folding arrangement with vertically adjustable conical tip folding mandrel. 4,607,830, Cl. 270-41.000.
Schumm, Brooke, Jr., to Union Carbide Corporation. Galvanic cells having ion exchange resin in their cathode mix. 4,608,279, Cl. 429-224.000.
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, to BASF Aktiengesellschaft. Heat-curable surface-coating agents, and their use. 4,608,416, Cl. 525-130.000.
Schuster, Friedrich, to FAG Kugelfischer Georg Schafer (KGaA). Friction rotor for the false-twisting of synthetic threads. 4,607,484, Cl. 57-337.000.
Schwabische Huttenwerke GmbH: *See—*
Vomhoff, Erich, 4,607,420, Cl. 29-113.00R.
Schwartz, C. Bruce. Videoendoscopic support stand. 4,607,897, Cl. 312-209.000.
Schwartz, Thomas W., to Minnesota Mining and Manufacturing Company. Coated abrasive back up pad. 4,607,464, Cl. 51-362.000.
Schwarz, Hildegard: *See—*
Stadler, Johann; and Schwarz, Hildegard, 4,607,767, Cl. 222-504.000.
Schwarz, William M.; and Pochan, John M., to Xerox Corporation. Donor for touchdown development. 4,608,328, Cl. 430-101.000.
Schwede, John G. Process for promoting and regulating plant growth with caulerpin. 4,608,077, Cl. 71-77.000.
Schwettmann, Frederic N.: *See—*
Neukermans, Armand P.; Chiang, Kuo L.; Schwettmann, Frederic N.; and Bradbury, Donald R., 4,608,326, Cl. 430-5.000.
Schwindt, Jurgen: *See—*
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, 4,608,413, Cl. 524-591.000.
Scientific Software-Intercomp, Inc.: *See—*
Gringarten, Alain C., 4,607,524, Cl. 73-152.000.
SCM Corporation: *See—*
Abbey, Kirk J., 4,608,423, Cl. 526-172.000.
Borovicka, David A., Sr., 4,608,410, Cl. 524-512.000.
Craun, Gary P.; and Abbey, Kirk J., 4,608,139, Cl. 204-181.700.
Lin, Ju-Chui, 4,608,421, Cl. 525-403.000.
Turpin, Edward T.; and Thrane, David T., 4,608,314, Cl. 428-425.800.
Scofield, Hartzell D., to Crisman Sand Company, Inc. Runner covers. 4,607,427, Cl. 29-432.000.
Scott, Kenneth C.: *See—*
Parker, Edward J.; and Scott, Kenneth C., 4,608,188, Cl. 252-99.000.
Scottish & Newcastle Breweries PLC: *See—*
Nicol, Stuart, 4,607,853, Cl. 277-12.000.
Scruggs, David M.: *See—*
Croopnick, Gerald A.; and Scruggs, David M., 4,608,319, Cl. 428-613.000.
Scudder, Ted: *See—*
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Seaborn Development, Inc.: *See—*
Ferri, Edward T., Jr.; and Seaborn, Paul E., 4,608,039, Cl. 493-164.000.
Seaborn, Paul E.: *See—*
Ferri, Edward T., Jr.; and Seaborn, Paul E., 4,608,039, Cl. 493-164.000.
Seachman, Ned J.; and Taillie, Joseph P., to Xerox Corporation. Compensating platen for dual mode image input terminals. 4,607,951, Cl. 355-51.000.
Sears, Lawrence M. Method and apparatus for sensing rotation of a dial arm of a utility meter. 4,607,527, Cl. 73-432.00A.
SEB S.A.: *See—*
Deville, Jean-Pierre, 4,607,512, Cl. 72-46.000.
Seibold, Gerhard: *See—*
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.
Seidel, Albert; Neuking, Hartmut; and Blenninger, Ernst, to Messerschmitt-Bolkow-Blohm GmbH. Helium II phase separator. 4,607,490, Cl. 62-51.000.
Seike, Noboru; Teranishi, Masatoshi; and Sakai, Minoru, to Snow Brand Milk Products, Co., Ltd. Locking mechanism for an endoscope. 4,607,619, Cl. 128-4.000.
Seiko Instruments & Electronics Ltd.: *See—*
Fukushima, Toshitaka, 4,607,641, Cl. 128-680.000.
Sekino, Teruyoshi: *See—*
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.
Sekiya, Matsuo: *See—*
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, 4,607,721, Cl. 181-249.000.
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusoaki, 4,607,722, Cl. 181-252.000.
Sellstrom, Kathy B., to Texaco Inc. Method for making syntactic foam with improved processing characteristics using a silane coupling agent in combination with an alkylphenol alkoxylate. 4,608,403, Cl. 523-218.000.
Seltenreich, Richard C.: *See—*
Bachenheimer, Bernard O.; Antoci, Frank J.; Carver, Edward L., Jr.; Pellegrino, Ernest N.; and Seltenreich, Richard C., 4,607,526, Cl. 73-432.0PS.
"Semiconductor Research Foundation" : *See—*
Nishizawa, Jun-ichi, 4,608,587, Cl. 357-30.000.
Senkingwerk GmbH: *See—*
Stoll, Karl-Heinz, 4,607,509, Cl. 68-27.000.
Seo, Kiyokazu: *See—*
Mori, Katsunori; Shimoda, Takuji; and Seo, Kiyokazu, 4,607,879, Cl. 296-201.000.
Sequoia Systems, Inc.: *See—*
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.
Sertic, James L.: *See—*
Aalto, William R.; and Sertic, James L., 4,607,671, Cl. 141-329.000.
Service National Electricite de France: *See—*
Brachet, Alain, 4,608,224, Cl. 376-405.000.
Seshamani, Venkatraman, to Foster Wheeler Energy Corporation. Tube and support system for a heat exchanger. 4,607,690, Cl. 165-145.000.
Setoguchi, Ryozo. Form creating system. 4,608,653, Cl. 364-522.000.
Sevigny, Charles P. Bird feeder. 4,607,597, Cl. 119-51.00R.
Shackle, Peter W.: *See—*
Hartman, Adrian R.; Riley, Terence J.; and Shackle, Peter W., 4,608,590, Cl. 357-38.000.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Copolymers of a 4,4'-(ethylenedioxy)bis benzoate, an alkylene diol and a (2-alkenyl or alkyl) succinic anhydride; and surgical devices formed therefrom. 4,608,428, Cl. 528-192.000.
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, to Ideal Security Inc. Lock mechanism for closure members. 4,607,510, Cl. 70-95.000.
Sharp, Bruce R. Storage tanks having secondary containment means. 4,607,522, Cl. 73-49.200.
Sharp Kabushiki Kaisha: *See—*
Kohka, Kenichi, 4,608,474, Cl. 219-10.55R.
Nakanishi, Yasuhiro; and Nishimura, Toshio, 4,608,557, Cl. 340-715.000.
Uchiyama, Hiroaki; Ibuchi, Yoshiaki; and Fujiwara, Katsuyoshi, 4,607,946, Cl. 355-14.00R.
Yamamoto, Hidehiko, 4,608,504, Cl. 307-442.000.

Shell Oil Company: *See*—
Brasted, Lee K.; and Uppencamp, George L., 4,607,982, Cl. 405-204.000.
Zijsling, Djurre H., 4,607,711, Cl. 175-329.000.
Sheller-Globe Corporation: *See*—
Reighard, Robert P.; Kinner, Samuel D.; and Ciesielski, Mark, 4,607,898, Cl. 339-3.00S.
Shellhouse, Wayne L.; and VanAuwelaer, James M., to Deere & Company. Chisel plow landside. 4,607,707, Cl. 172-764.000.
Shelton, Alan J., to General Motors Corporation. Vehicle body panel arrangement. 4,607,877, Cl. 296-191.000.
Sherman, William, III; Larkin, Francis C.; and Horvath, Stephen J., to Brandt, Incorporated. Method and apparatus for counting sheets which may be fed in skewed and/or overlapping fashion. 4,608,704, Cl. 377-8.000.
Sherrow, Lionel. Paint brush cleaning rack. 4,607,752, Cl. 211-65.000.
Sherstnev, Pavel P.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Sabdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Viliary B., 4,607,796, Cl. 241-3.000.
Shewchuk, James G. Door and door jamb arrangement. 4,607,457, Cl. 49-400.000.
Shibanuma, Tadao; Nakano, Kohji; Nagano, Noriaki; Murakami, Yukiyasu; and Hara, Ryuichiro, to Yamanouchi Pharmaceutical Co., Ltd. Cephem compounds. 4,608,373, Cl. 514-202.000.
Shibasaki, Makoto: *See*—
Takeuchi, Hideo; Kobayashi, Michiaki; and Shibasaki, Makoto, 4,607,571, Cl. 101-365.000.
Shibata, Kiyoshi: *See*—
Watashi, Masahiro; Kimura, Hiroshi; Shibata, Kiyoshi; Hisajima, Masahiko; and Yamamoto, Kiyonori, 4,607,734, Cl. 192-67.00R.
Shibuya, Kazunobu: *See*—
Fujimoto, Kiyokatsu; Shibuya, Kazunobu; and Urata, Tetsukazu, 4,607,495, Cl. 62-63.000.
Shigaki, Seiichiro, to NEC Corporation. Test apparatus for digital speech interpolator for use in time division multiple access scheme. 4,608,683, Cl. 370-13.000.
Shigemura, Yutaka: *See*—
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.
Shilkov, Andrei V.: *See*—
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., to Spetsialnoe Konstruktorskoe Bjuro "Stroimekhanizatsia". Apparatus for compacting soil, concrete and like materials. 4,607,980, Cl. 404-133.000.
Shima Idea Center Co., Ltd.: *See*—
Shima, Masahiro, 4,608,642, Cl. 364-470.000.
Shima, Masahiro, to Shima Idea Center Co., Ltd. Apparatus for recording pattern information and producing a knitting control program. 4,608,642, Cl. 364-470.000.
Shimada, Yutaka; Kojima, Hiroshi; and Hasegawa, Takashi, to Showa Denka Kabushiki Kaisha. Multilayer composite soft magnetic material comprising amorphous and insulating layers and a method for manufacturing the core of a magnetic head and a reactor. 4,608,297, Cl. 428-215.000.
Shimashita, Ishio; and Nishimura, Yasuhiko, to Ricoh Company, Ltd.; and Ricoh Denshi Co., Ltd. Multi-pen plotter-printer. 4,608,576, Cl. 346-49.000.
Shimizu, Akihiko, to Japax Incorporated. Retraction control for 3D-path controlled generic electrode electroerosion. 4,608,476, Cl. 219-69.00M.
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, to Toyo Kohan Co., Ltd. Method of producing metallic chromium, tin or tin-nickel, and hydrated chromium oxide electroplated steel. 4,608,130, Cl. 204-27.000.
Shimizu, Tsuguo; Wada, Kenichi; Shintani, Yooichi; and Yamaoka, Akira, to Hitachi, Ltd. Buffer storage including a swapping circuit. 4,608,671, Cl. 365-230.000.
Shimizu, Yukio: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.
Shimkunas, Alexander R., to Micronix Corporation. Process for making a mask used in x-ray photolithography. 4,608,268, Cl. 427-8.000.
Shimoda, Takuji: *See*—
Mori, Katsunori; Shimoda, Takuji; and Seo, Kiyokazu, 4,607,879, Cl. 296-201.000.
Shimp, David A., to Celanese Corporation. Metal carboxylate/alcohol curing catalyst for polycyanate ester of polyhydric phenol. 4,608,434, Cl. 528-422.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Yokokawa, Kiyoshi; Koya, Kazuo; and Hosino, Syouji, 4,608,071, Cl. 65-13.000.
Shin, Hyunkook: *See*—
Gale, David M.; and Shin, Hyunkook, 4,608,089, Cl. 106-90.000.
Shinagawa Refractories Co., Ltd.: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; and Asami, Hajime, 4,608,087, Cl. 106-18.120.
Shintani, Yooichi: *See*—
Shimizu, Tsuguo; Wada, Kenichi; Shintani, Yooichi; and Yamaoka, Akira, 4,608,671, Cl. 365-230.000.
Shinzawa, Motohiro; and Hasegawa, Yoji, to Nissan Motor Company, Limited. Trap regenerative device control apparatus. 4,608,640, Cl. 364-431.030.
Shiomi, Yasufumi; and Yoshimura, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Frequency converter. 4,608,713, Cl. 455-325.000.
Shiosaki, Masao, to Kabushiki Kaisha Toshiba. Cartridge loading apparatus. 4,608,681, Cl. 369-77.200.
Shiote, Kanjo: *See*—
Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, 4,607,645, Cl. 131-109.100.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, to Toyota Jidosha Kabushiki Kaisha; and Aisin Seiki Co., Ltd. Door window regulator. 4,607,456, Cl. 49-352.000.
Shirasu, Hirotoshi: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.
Shkolnik, Alexander: *See*—
Borodulin, German; Persidsky, Maxim; and Shkolnik, Alexander, 4,607,626, Cl. 128-43.000.
Shong, Robert G.: *See*—
Cobbs, Walter H., Jr.; Shong, Robert G.; and Rehman, William R., 4,608,398, Cl. 521-113.000.
Shore, Terence M., to Morgan Construction Company. Tension prefinishing with sizing stands. 4,607,511, Cl. 72-16.000.
Showa Denka Kabushiki Kaisha: *See*—
Shimada, Yutaka; Kojima, Hiroshi; and Hasegawa, Takashi, 4,608,297, Cl. 428-215.000.
Showalter, Hollis D.: *See*—
Johnson, Judith L.; and Showalter, Hollis D., 4,608,439, Cl. 548-357.000.
Shreck, Peter K.; and Dudding, John, to Moving Picture Company Inc., The. Video response testing apparatus. 4,608,601, Cl. 358-146.000.
Shuto, Sadanobu; Fujita, Munehisa; and Hasebe, Kazunori, to Fuji Photo Film Co., Ltd. Silver halide color light-sensitive material. 4,608,334, Cl. 430-505.000.
Shwayder, Warren M. Method of manufacturing an adjustable mounting snow plow skid shoes. 4,607,781, Cl. 228-175.000.
Siecke, Albert E.; and Janos, Edward, to Warner-Lambert Company. Method and apparatus for twisting and advancing strand material. 4,607,483, Cl. 57-334.000.
Siegel, Stefan A., to RCA Corporation. Bandwidth controlled data amplifier. 4,608,542, Cl. 330-279.000.
Siemens Aktiengesellschaft: *See*—
Eidling, Karl, 4,607,545, Cl. 81-9.510.
Hieber, Konrad; Stolz, Manfred; and Wieczorek, Claudia, 4,608,271, Cl. 427-38.000.
Krause, Dieter, 4,607,775, Cl. 225-96.500.
Nagel, Klaus, 4,608,629, Cl. 364-200.000.
Siemens-Allis, Inc.: *See*—
Kralik, Andrew J., 4,608,545, Cl. 335-16.000.
Siemens Corporate Research & Support Inc.: *See*—
Tsikos, Constantine, 4,608,638, Cl. 364-424.000.
Sievers, Willi: *See*—
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.
Siewert, Robert L.: *See*—
Varnelis, Edmund K.; and Siewert, Robert L., 4,607,977, Cl. 403-154.000.
Signetics Corporation: *See*—
Keshtbod, Parviz, 4,608,585, Cl. 357-23.500.
Signoretti, Edward J. Automatic bowling position indicator. 4,607,843, Cl. 273-54.00C.
Silar, Steven J., to Beloit Corporation. Apparatus for automatically controlling the position of a plurality of slitters. 4,607,552, Cl. 83-71.000.
Silcon Elektronik A/S: *See*—
Rathmann, Soren, 4,608,499, Cl. 307-66.000.
Silverman, Lance D.; and Speronello, Barry K., to Engelhard Corporation. Catalytic cracking with mullite composition promoted combustion of carbon monoxide. 4,608,357, Cl. 502-84.000.
Simmel S.p.A.: *See*—
Bissi, Maurizio; Cocco, Andrea; and Baggio, Guerrino, 4,607,854, Cl. 277-152.000.
Sindelar, Dorothy, legal representative: *See*—
Schafer, Thomas B.; Sindelar, William, deceased; and Cummens, Joseph R., 4,607,516, Cl. 72-405.000.
Sindelar, William, deceased: *See*—
Schafer, Thomas B.; Sindelar, William, deceased; and Cummens, Joseph R., 4,607,516, Cl. 72-405.000.
Sineni, Charles F.; and Sineni, Debra A. Toilet paper holder and dispenser. 4,607,809, Cl. 242-55.300.
Sineni, Debra A.: *See*—
Sineni, Charles F.; and Sineni, Debra A., 4,607,809, Cl. 242-55.300.
Singer Company, The: *See*—
Lynch, James, 4,608,691, Cl. 371-25.000.
Singh, Anand P.; Crumbacher, Thomas A.; Naylor, Gary R.; and Fagan, Thomas R., Jr., to NRM Corporation. Tire press, loader and method. 4,608,219, Cl. 264-315.000.
Singh, Prithipal: *See*—
Khanna, Pyare; Snyder, Evan S.; and Singh, Prithipal, 4,608,252, Cl. 424-85.000.

Khanna, Pyare L.; Snyder, Evan S.; and Singh, Prithipal, 4,608,200, Cl. 530-387.000.

Sinn, Hannsjoerg: *See*—
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.

Sinor, Lyle T.: *See*—
Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., 4,608,246, Cl. 424-11.000.

Sinta, Roger F.: *See*—
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,608,429, Cl. 528-194.000.

Sisson, Terrell W. Mirrored bed canopy. 4,607,401, Cl. 5-414.000.

Six, Jorg, to Paul Hellermann GmbH. Device for tying an elongate object, for example a cable trunk. 4,607,414, Cl. 24-16.0PB.

Skandunas, Vince J.: *See*—
Davis, Richard J.; and Skandunas, Vince J., 4,607,726, Cl. 182-204.000.

SKF Kugellagerfabriken GmbH: *See*—
Hans, Rudiger; and Kotzab, Werner, 4,607,737, Cl. 192-88.00A.

Ski-Ace Pty. Limited: *See*—
Williams, Frederick W., 4,608,023, Cl. 441-68.000.

Skolnick, Joel B. Book with puppet. 4,608,024, Cl. 446-148.000.

Sleep, Robert E., Jr. Method for manufacturing a disassembleable core heat exchanger. 4,607,423, Cl. 29-157.30R.

Sleeper & Hartley Corp.: *See*—
Russell, Frank S., 4,607,513, Cl. 72-137.000.

Slinsky, Albert. Adjustment means for a drill bit sharpening device. 4,607,463, Cl. 51-219.00R.

Slope Indicator Company, The: *See*—
Boisen, Bradford P., 4,607,435, Cl. 33-125.00B.

Slorstad, Eli: *See*—
Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., 4,608,154, Cl. 209-166.000.

SMID S.A.: *See*—
Erhard, Raymond, 4,607,555, Cl. 83-471.200.

Smigel, Irwin E. Method for selecting the coloration of a bonding composite for a discolored tooth. 4,608,015, Cl. 433-26.000.

Smith, David H.; and Brum, Roger D., to Southwest Aerospace Corporation. Jet exhaust simulator. 4,607,849, Cl. 273-348.100.

Smith, John M.: *See*—
Ennis, David G.; and Smith, John M., 4,608,566, Cl. 343-5.0PD.

Smith Kline & French Laboratories Limited: *See*—
Brown, Thomas H., 4,608,380, Cl. 514-318.000.

Smith, Roger E.: *See*—
Witty, Thomas R.; Curry, Robert E.; and Smith, Roger E., 4,608,231, Cl. 422-61.000.

Smith, Ward C. Pressure sensitive label dispenser. 4,608,110, Cl. 156-250.000.

Smith, William N.: *See*—
Newton, Jean M.; and Smith, William N., 4,608,026, Cl. 446-330.000.

Smous, Dale L.: *See*—
Straccia, William J., Sr.; and Smous, Dale L., 4,607,751, Cl. 211-41.000.

SMS HasenClever Maschinenfabrik GmbH: *See*—
Schubert, Hans A.; and Schulze, Klaus, 4,607,518, Cl. 72-453.120.

Snell, Reginald J., to British Aerospace Public Limited Company. Navigational aid. 4,608,641, Cl. 364-434.000.

Snow Brand Milk Products, Co., Ltd.: *See*—
Seike, Noboru; Teranishi, Masatoshi; and Sakai, Minoru, 4,607,619, Cl. 128-4.000.

Snyder, Evan S.: *See*—
Khanna, Pyare; Snyder, Evan S.; and Singh, Prithipal, 4,608,252, Cl. 424-85.000.
Khanna, Pyare L.; Snyder, Evan S.; and Singh, Prithipal, 4,608,200, Cl. 530-387.000.

Societe Anonyme dite: L'Oreal: *See*—
Jacquet, Bernard; and Lang, Gerard, 4,608,250, Cl. 424-71.000.
Jacquet, Bernard; and Gaetani, Quintino, 4,608,392, Cl. 514-844.000.

Societe Europeenne des Produits Refractaires: *See*—
Urffer, Daniel, 4,607,697, Cl. 166-280.000.

Societe Nationale Elf Aquitaine: *See*—
Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, 4,608,411, Cl. 524-533.000.

Societe Nationale Industrielle Aerospatiale: *See*—
Philipoussi, Jean-Pierre, 4,607,780, Cl. 228-118.000.

Sogo, Toshiyuki: *See*—
Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, 4,607,945, Cl. 355-14.00R.

Solomat S.A.: *See*—
Ibar, Jean P.; and Saffell, John R., 4,608,532, Cl. 324-73.00R.

Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, to Kanesho Company Limited; and Toyo Soda Manufacturing Company Limited. Herbicidal 2-[4-(4-cyanophenoxy)-phenoxy]-alkanoic acid amides. 4,608,081, Cl. 71-94.000.

Sony Corporation: *See*—
Hayafuji, Yoshinori, 4,608,493, Cl. 250-397.000.
Oda, Tatsuji; Mamine, Takayoshi; and Yoneyama, Osamu, 4,608,695, Cl. 372-45.000.
Takano, Masayuki; and Nakamura, Kenji, 4,608,609, Cl. 358-320.000.
Yano, Hajime, 4,608,680, Cl. 369-44.000.
Yoshida, Tadao; and Haneda, Yoshiaki, 4,608,676, Cl. 369-32.000.

Sony/Tektronix Corporation: *See*—
Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, 4,608,657, Cl. 364-571.000.
Yokokawa, Hidemi; and Fukuzawa, Miyuki, 4,608,652, Cl. 364-521.000.

Sorensen, Wilfred B. Autogenous solar water heater. 4,607,688, Cl. 165-104.220.

Sota, Yasuo, to Elmec Corporation. Switch device. 4,608,467, Cl. 200-16.00D.

Southwest Aerospace Corporation: *See*—
Smith, David H.; and Brum, Roger D., 4,607,849, Cl. 273-348.100.

Spacesaver Corporation: *See*—
Peterman, Robert J., 4,607,896, Cl. 312-201.000.

Spearen, John: *See*—
Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, 4,607,421, Cl. 29-157.10R.

Spector, George: *See*—
Ellis, Linda N.; and Spector, George, 4,607,405, Cl. 5-451.000.

Spectrum CVD, Inc.: *See*—
Stitz, Robert W., 4,607,591, Cl. 118-666.000.

Speronello, Barry K.: *See*—
Silverman, Lance D.; and Speronello, Barry K., 4,608,357, Cl. 502-84.000.

Spetsialnoe Konstruktorskoe Bjuro "Stroimekhanizatsia": *See*—
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Spigolon, Silvio J.: *See*—
Wilson, Eddie K., Sr.; and Spigolon, Silvio J., 4,608,238, Cl. 423-178.000.

Spils, Richard W. High pressure radial flow valve. 4,607,819, Cl. 251-121.000.

Spindler, Heinz, to Dudzik, Joachim; and Dudzik, Winifred. Tamper proof label or seal. 4,608,288, Cl. 428-78.000.

Spiral Step Tool Company: *See*—
Breitenstein, Charles T.; and Holecek, Allen R., 4,608,643, Cl. 364-474.000.

Spire Corporation: *See*—
Landis, Geoffrey A., 4,608,451, Cl. 136-256.000.

Spits, Marc, to Fundatech S.A. Intravaginal contraceptive device. 4,607,630, Cl. 128-127.000.

Sponer, Gisbert: *See*—
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, to International Flavors & Fragrances Inc. Isochroman derivatives and organoleptic uses thereof. 4,608,193, Cl. 252-522.00R.

Sproul, William D., to Borg-Warner Corporation. High hardness hafnium nitride. 4,608,243, Cl. 423-409.000.

Stadler, Johann; and Schwarz, Hildegard, to Voest-Alpine Aktiengesellschaft. Closure device for the discharge opening of an autoclave. 4,607,767, Cl. 222-504.000.

Stahl, Hans-Georg: *See*—
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, 4,608,413, Cl. 524-591.000.

Stahle, Werner; Weller, Karl-Heinz; and Stolz, Albert, to Daimler-Benz Aktiengesellschaft. Blower housing arrangement. 4,607,564, Cl. 98-2.000.

Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Feed arrangement for an open-end friction spinning machine. 4,607,485, Cl. 57-401.000.

Stahlecker, Hans: *See*—
Stahlecker, Fritz, 4,607,485, Cl. 57-401.000.

Staltmeir, Josef; and Wosegien, Bernd, to Knorr-Bremse AG. Brake unit for rail vehicles. 4,607,729, Cl. 188-153.00R.

Standard Grigsby, Inc.: *See*—
Bornhofen, James A., 4,608,466, Cl. 200-11.00D.

Standard Oil Company, The: *See*—
Mazanec, Terry J.; Goeden, Gary V.; and Frye, John G., Jr., 4,608,447, Cl. 568-902.000.

Standard Telephones and Cables Public Limited Company: *See*—
Brambley, Roger J., 4,608,273, Cl. 427-54.100.
Lamb, John G.; and McHugh, Terence M., 4,608,276, Cl. 427-163.000.

Stanhope, Harry W.: *See*—
Bell, Gilbert C.; and Stanhope, Harry W., 4,607,481, Cl. 57-3.000.

Stants, Richard O.; and Olds, Kerry J. Parts coating apparatus and method. 4,607,588, Cl. 118-52.000.

Staplin, Theodore R., Jr.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.

Starkie, Alan H., to Electric Power Research Institute, Inc. Automatic compensation circuit for use with analog multiplier. 4,608,533, Cl. 324-142.000.

Steigerwald, Franz: *See*—
Zulauf, Karlheinz; and Steigerwald, Franz, 4,607,762, Cl. 222-48.000.

Steiner, Andi. Packaging for a product as well as use of the same. 4,607,747, Cl. 206-232.000.

Steinkuhl, Bernd: *See*—
Merten, Gerhard; Steinkuhl, Bernd; and Hauschopp, Alois, 4,607,890, Cl. 299-43.000.

Stenild, Eddie L. Apparatus for dispersing a dye over securities in a closed space at attempts at burglary. 4,607,579, Cl. 109-25.000.

Stepan Company: *See*—
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, 4,608,432, Cl. 528-274.000.
Stephano, Marc, to Cibie Projecteurs. Automobile headlamp with inclined front glass. 4,608,623, Cl. 362-80.000.
Stephens, David J., to Exxon Production Research Co. Method for treating a tar sand reservoir to enhance petroleum production by cyclic steam stimulation. 4,607,699, Cl. 166-303.000.
Stephens, Michael L. Test set for testing as a unit an amplifier system having several modules. 4,608,531, Cl. 324-73.00R.
Stephenson, Earle W.: *See*—
Makrides, Nicholas; and Stephenson, Earle W., 4,608,318, Cl. 428-553.000.
Steppat, Gerhard: *See*—
Biermann, Kurt; Steppat, Gerhard; and Wehmeyer, Bodo, 4,607,583, Cl. 112-130.000.
Sterling, Thomas L.: *See*—
Kirtley, James L., Jr.; Sterling, Thomas L.; and Williams, Ronald D., 4,608,700, Cl. 375-36.000.
Stern, Bruce A., to American Cyanamid Company. Bis-maleimide resin composition. 4,608,426, Cl. 528-170.000.
Stevens, Georges, to Girard Transmissions. Belt speed variator. 4,608,033, Cl. 474-39.000.
Stevens, Kenneth V., to Grainware Company. Serving tray. 4,607,758, Cl. 220-23.830.
Stevin Construction Inc.: *See*—
van Klinken, Peter G., 4,607,981, Cl. 405-52.000.
Stewart, Roger G.: *See*—
Ipri, Alfred C.; and Stewart, Roger G., 4,608,591, Cl. 357-54.000.
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., to Sequoia Systems, Inc. Modular computer system. 4,608,631, Cl. 364-200.000.
Stillman, Allyn N.: *See*—
Farmer, Edward R.; and Stillman, Allyn N., 4,608,128, Cl. 204-16.000.
Stillwell, Billy E., to General Electric Company. Battery charger adapter. 4,608,528, Cl. 320-2.000.
Stilwell, Robert K.: *See*—
Webster, Carson W.; and Stilwell, Robert K., 4,608,574, Cl. 343-895.000.
Stinnette, Russell A., to Cordis Corporation. Packaging tube. 4,607,746, Cl. 206-53.000.
Stitz, Robert W., to Spectrum CVD, Inc. CVD heater control circuit. 4,607,591, Cl. 118-666.000.
Stockton, Thomas R.; and Morris, Frederick J., to Ford Motor Company. Infinitely variable belt drive with low friction seals for the primary and secondary sheaves. 4,608,032, Cl. 474-28.000.
Stoffers, Brian L.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.
Stoll, Karl-Heinz, to Senkingwerk GmbH. Counterflow cycling washing machine. 4,607,509, Cl. 68-27.000.
Stolz, Albert: *See*—
Stahle, Werner; Weller, Karl-Heinz; and Stolz, Albert, 4,607,564, Cl. 98-2.000.
Stolz, Manfred: *See*—
Hieber, Konrad; Stolz, Manfred; and Wieczorek, Claudia, 4,608,271, Cl. 427-38.000.
Storz, Karl. Medical gripping instrument. 4,607,620, Cl. 128-4.000.
Straccia, William J., Sr.; and Smous, Dale L., to Electro-Space Fabricators, Inc. Antivibration guides for securing printed circuit cards. 4,607,751, Cl. 211-41.000.
Strack, Hans; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Process for the production of a seed mixture for faujasite synthesis. 4,608,236, Cl. 423-118.000.
Straka, Alfred: *See*—
Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, 4,607,413, Cl. 15-301.000.
Straub, Richard L.: *See*—
Pou, Frederick M.; and Straub, Richard L., 4,607,572, Cl. 101-426.000.
Straus, Alan E.: *See*—
Lew, Henry Y.; and Straus, Alan E., 4,608,204, Cl. 260-505.00N.
Striker, Richard A.: *See*—
Eckberg, Richard P.; Striker, Richard A.; and Modic, Frank J., 4,608,312, Cl. 428-419.000.
Sturtevant-Stuart, Ronald M., to Verbatim Corporation. Digital alignment diagnostic disk. 4,608,618, Cl. 360-135.000.
Su, Sophia R., to GTE Laboratories Incorporated. Graphite intercalates containing metal-charge transfer salts. 4,608,192, Cl. 252-506.000.
Suda, Susumu: *See*—
Watanabe, Yoshitane; Suzuki, Keitaro; and Suda, Susumu, 4,608,198, Cl. 252-609.000.
Suetrak U.S.A.: *See*—
Ferdows, Houshang; Krug, Martin; and Bihl, Paul R., 4,607,497, Cl. 62-179.000.
Suga Test Instruments Co., Ltd.: *See*—
Matsuki, Hiroshi; and Sumiyoshi, Takao, 4,607,790, Cl. 236-94.000.
Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Hydraulic control system for automatic transmission with shockless 4-3 and 4-2 shiftings. 4,607,542, Cl. 74-869.000.
Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Hydraulic control system for automatic transmission having torque converter with lock-up mechanism. 4,607,731, Cl. 192-3.290.
Sugawara, Norio; and Nawa, Motoyuki, to Matsushita Electric Industrial Co., Ltd. Flow deflecting assembly. 4,607,565, Cl. 98-40.240.
Sugihara, Isao; Nishijima, Akio; and Toriguchi, Michio, to Denki Kagaku Kogyo Kabushiki Kaisha. Acetylene black. 4,608,244, Cl. 423-445.000.
Sugimoto, Tamio; Fukazawa, Yoshimitsu; and Yamaguchi, Kunio, to Mitsubishi Jukogyo Kabushiki Kaisha. Scroll type fluid machine with angular adjustment means. 4,608,001, Cl. 418-55.000.
Sugioka, Taizo: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.
Sugita, Akio: *See*—
Tamamura, Toshiaki; Niwa, Osamu; Hikita, Makoto; and Sugita, Akio, 4,608,129, Cl. 204-18.100.
Sugitani, Yuji: *See*—
Nomura, Hirokazu; Sugitani, Yuji; and Tamaoki, Naohiro, 4,608,481, Cl. 219-125.120.
Sugiura, Toshihiro, to Masprodenkoh Kabushikikaisha. Apparatus for receiving satellite broadcasts. 4,608,710, Cl. 455-4.000.
Sugiyama, Hiroyuki, to Victor Company of Japan, Ltd. Digital video signal transmitting apparatus. 4,608,600, Cl. 358-138.000.
Sukenobu, Satoru, to Kabushiki Kaisha Toshiba. Cryosorption pump. 4,607,493, Cl. 62-55.500.
Sukimoto, Yasuyuki: *See*—
Nagao, Toshiaki; and Sukimoto, Yasuyuki, 4,607,962, Cl. 374-103.000.
Sullivan, Thomas E.; and Bleeks, Thomas W., to Enthone, Incorporated. Peroxide selective stripping compositions and method. 4,608,091, Cl. 134-3.000.
Sumitomo Chemical Company, Limited: *See*—
Haga, Toru; Nagano, Eiki; Sato, Ryo; and Yoshida, Ryo, 4,608,080, Cl. 71-92.000.
Kisida, Hirosi; Hatakoshi, Makoto; and Nishida, Sumio, 4,608,389, Cl. 514-539.000.
Minai, Masayoshi; and Katsura, Tadashi, 4,608,442, Cl. 568-346.000.
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.
Yamamoto, Haruyasu; and Okabe, Takayuki, 4,608,369, Cl. 514-144.000.
Yoshida, Zenichi; and Miki, Sadao, 4,608,358, Cl. 502-164.000.
Sumitomo Electric Industries Ltd.: *See*—
Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, 4,607,578, Cl. 108-145.000.
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, 4,608,535, Cl. 324-244.000.
Sumitomo Special Metal Co., Ltd.: *See*—
Wada, Toshiaki; and Katsuyama, Yoshiaki, 4,608,293, Cl. 428-141.000.
Sumiyoshi, Takao: *See*—
Matsuki, Hiroshi; and Sumiyoshi, Takao, 4,607,790, Cl. 236-94.000.
Summers, James B., Jr., to Abbott Laboratories. Lipoxygenase inhibiting compounds. 4,608,390, Cl. 514-575.000.
Sunano, Naomasa; and Asahi, Naotatsu, to Hitachi, Ltd. Gas sensor. 4,608,232, Cl. 422-88.000.
Sundstrand Corporation: *See*—
Glennon, Timothy F.; and Vaidya, Jayant G., 4,608,527, Cl. 318-685.000.
Sung, Rodney L.: *See*—
Davis, Marshall E.; and Sung, Rodney L., 4,608,057, Cl. 44-51.000.
Sunshine Biscuits, Inc.: *See*—
Curley, Edward, 4,607,742, Cl. 198-398.000.
Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co.: *See*—
Westermeyer, Joseph, 4,608,546, Cl. 335-20.000.
Suska, Charles R. Clamping apparatus. 4,607,829, Cl. 269-88.000.
Sutenbach, Paul M.: *See*—
Peek, Brian R.; and Sutenbach, Paul M., 4,607,976, Cl. 403-77.000.
Suzuki, Hidetaka: *See*—
Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, 4,608,656, Cl. 364-449.000.
Suzuki, Keitaro: *See*—
Watanabe, Yoshitane; Suzuki, Keitaro; and Suda, Susumu, 4,608,198, Cl. 252-609.000.
Suzuki, Toshiro: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.
Suzuki, Yasuo: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,608,253, Cl. 424-94.000.
Suzumura, Nobuyasu: *See*—
Umebayashi, Kazuyuki; and Suzumura, Nobuyasu, 4,608,550, Cl. 340-22.000.
Svarc, Gordon: *See*—
Robinson, Richard M.; and Svarc, Gordon, 4,608,280, Cl. 427-230.000.
Svechnikov, Sergei V.: *See*—
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.
Svenska Tobaks AB: *See*—
Linden, Gunther, 4,607,479, Cl. 53-530.000.

Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., to Bell & Howell Company. Demand document feeder. 4,607,833, Cl. 271-10.000.

Swain, Roy D.: *See—*
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.

Sweeny, Wilfred; and Kwolek, Stephanie L., to Du Pont de Nemours, E. I., and Company. Method for making PBO and PBT polymers. 4,608,427, Cl. 528-179.000.

Swigert, David: *See—*
Leber, Leland C.; and Swigert, David, 4,607,627, Cl. 128-66.000.

Swisher, Horton E.: *See—*
Epperson, Donald E.; Curley, Orvin B.; and Swisher, Horton E., 4,608,266, Cl. 426-599.000.

Swiss Aluminium Ltd.: *See—*
Wulff, Gunther, 4,607,960, Cl. 374-7.000.

Syftestad, Glenn T.: *See—*
Caplan, Arnold; and Syftestad, Glenn T., 4,608,199, Cl. 530-414.000.

Syntex (U.S.A.) Inc.: *See—*
Khanna, Pyare; Snyder, Evan S.; and Singh, Prithipal, 4,608,252, Cl. 424-85.000.
Khanna, Pyare L.; Snyder, Evan S.; and Singh, Prithipal, 4,608,200, Cl. 530-387.000.
Kluge, Arthur F.; Willis, Anthony L.; and O'Yang, Counde, 4,608,388, Cl. 514-510.000.

Szabo, Emilie: *See—*
Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, 4,607,859, Cl. 280-632.000.

Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan. Immobilized aminoacylase enzyme. 4,608,340, Cl. 435-180.000.

Szasz, Tibor: *See—*
Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, 4,607,859, Cl. 280-632.000.

Szegvari Haziipari Szovetkezet: *See—*
Keresztessy nee Badi, Maria; Paka nee Kas, Eleonora; Gyongyossy, Lajos; Farkas, Bela; and Paku, Sandor, 4,608,090, Cl. 106-272.000.

Taber, James M.; and Kras, Stephen J., to Continental White Cap, Inc. Dispensing closure with latch mechanism. 4,607,768, Cl. 222-556.000.

Tabuchi, Sunao: *See—*
Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu, 4,608,127, Cl. 203-48.000.

Taco Bell: *See—*
Cortopassi, Jeffery J., 4,608,259, Cl. 426-115.000.

Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, to Sumitomo Electric Industries, Ltd. Magnetic field and current measuring device using a Faraday cell with a thin electrically conductive film substantially covering the Faraday cell. 4,608,535, Cl. 324-244.000.

Taiko Pharmaceutical Co., Ltd.: *See—*
Yamanaka, Kiyoyuki, 4,608,258, Cl. 424-195.100.

Taillie, Joseph P.: *See—*
Seachman, Ned J.; and Taillie, Joseph P., 4,607,951, Cl. 355-51.000.

Taipale, Dale L.; and Winkelman, John H., to Brandt, Inc. Coin sorter. 4,607,649, Cl. 133-3.00C.

Taiyo Pharmaceutical Industry Co., Ltd.: *See—*
Hasegawa, Takahito; and Adachi, Hideo, 4,608,366, Cl. 514-58.000.

Tajima, Hatsuo: *See—*
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.

Takahashi, Fumio: *See—*
Miyaji, Yoshimori; Fujiki, Hirokazu; and Takahashi, Fumio, 4,608,593, Cl. 358-10.000.

Takahashi, Hiroyuki: *See—*
Yamamoto, Takashi; Kitajima, Houdo; and Takahashi, Hiroyuki, 4,608,509, Cl. 310-357.000.

Takahashi, Junya: *See—*
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, to Fujitsu Ten Limited; and Toyota Jidosha Kabushiki Kaisha. Crank angle detecting apparatus for an internal combustion engine. 4,607,523, Cl. 73-116.000.

Takahashi, Toshiaki: *See—*
Ikeda, Fukuji; and Takahashi, Toshiaki, 4,608,580, Cl. 346-216.000.

Takano, Masayuki; and Nakamura, Kenji, to Sony Corporation. Apparatus for recording a color video signal. 4,608,609, Cl. 358-320.000.

Takao, Hisashi: *See—*
Endo, Yoshinori; and Takao, Hisashi, 4,608,367, Cl. 514-89.000.

Takemoto, Akira: *See—*
Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, 4,607,578, Cl. 108-145.000.

Takeo, Yuji; and Yoshimi, Tomohisa, to Nippondenso Co., Ltd. Speed alarm system for automotive vehicle. 4,608,551, Cl. 340-53.000.

Takeuchi, Hideo; Kobayashi, Michiaki; and Shibasaki, Makoto, to Dai Nippon Insatsu Kabushiki Kaisha. Method for adjusting an ink fountain in a printing press and ink fountains. 4,607,571, Cl. 101-365.000.

Takeuchi, Masakazu: *See—*
Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu, 4,608,127, Cl. 203-48.000.

Takita, Kentaro: *See—*
Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, 4,608,657, Cl. 364-571.000.

Takizawa, Toshiaki: *See—*
Tanikawa, Koichi; and Takizawa, Toshiaki, 4,607,416, Cl. 24-389.000.

Talcott, Thomas D.: *See—*
Wright, George M.; and Talcott, Thomas D., 4,608,050, Cl. 623-6.000.

Talir, Jiri: *See—*
Bischofberger, Walter; Eichholzer, Heinz; Graber, Werner; and Talir, Jiri, 4,608,470, Cl. 200-144.0AP.

Tamamura, Toshiaki; Niwa, Osamu; Hikita, Makoto; and Sugita, Akio, to Nippon Telegraphy and Telephone. Polymer film with conductive pattern and method of manufacturing the same. 4,608,129, Cl. 204-18.100.

Tamaoki, Naohiro: *See—*
Nomura, Hirokazu; Sugitani, Yuji; and Tamaoki, Naohiro, 4,608,481, Cl. 219-125.120.

Tamosiunis, Richard R.: *See—*
Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., 4,608,154, Cl. 209-166.000.

Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., to University of California, Regents of the. Method and system for controlling bladder evacuation. 4,607,639, Cl. 128-419.00E.

Tanaka, Atsushi: *See—*
Murakami, Yoshishige; Inoue, Takeshi; and Tanaka, Atsushi, 4,608,598, Cl. 358-113.000.

Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, to Nissan Motor Company, Limited. Road map display system with indication of a vehicle position. 4,608,656, Cl. 364-449.000.

Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, to Mitsubishi Denki Kabushiki Kaisha. Muffler for exhaust gas from an internal combustion engine. 4,607,721, Cl. 181-249.000.

Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusoaki, to Mitsubishi Denki Kabushiki Kaisha. Muffler for exhaust gas from an internal combustion engine. 4,607,722, Cl. 181-252.000.

Tanaka, Ichiro: *See—*
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,607,651, Cl. 134-62.000.

Tanaka, Kano, to Canon Kabushiki Kaisha. Information retrieval apparatus capable of stopping an information bearing medium accurately at a desired location. 4,608,705, Cl. 377-18.000.

Tanaka, Shigetaka: *See—*
Kaga, Mitsuru; and Tanaka, Shigetaka, 4,608,703, Cl. 375-114.000.

Tanaka, Yoshiro: *See—*
Kuroda, Masato; Tanaka, Yoshiro; and Wada, Norikazu, 4,607,533, Cl. 73-861.120.

Tandy Corporation: *See—*
Nakamura, Keiichi; and Horiuchi, Hideyuki, 4,608,459, Cl. 179-6.030.

Taniguchi, Hitoshi: *See—*
Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, 4,608,203, Cl. 530-378.000.

Taniguchi, Keishi, to Ricoh Company, Ltd. Thermosensitive recording material. 4,608,579, Cl. 346-209.000.

Taniguchi, Shinji: *See—*
Moriwaki, Ikuo; and Taniguchi, Shinji, 4,608,541, Cl. 330-10.000.

Tanikawa, Koichi; and Takizawa, Toshiaki, to Yoshida Kogyo K.K. Fluid-tight slide fastener. 4,607,416, Cl. 24-389.000.

Tanimoto, Mitsutoshi: *See—*
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Tanuma, Chiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Temperature compensated drive for a piezoelectric displacement generator. 4,608,506, Cl. 310-315.000.

Taquino, Weldon P. Preloaded compression absorber cell for boat bumpers. 4,607,586, Cl. 114-219.000.

Task, Harry L.; and Genco, Louis V. Contrast sensitivity function measurement chart and method. 4,607,923, Cl. 351-239.000.

Tatsuguchi, Kazuo, to Victor Company of Japan, Ltd. Jitter compensation system in rotary recording medium reproducing apparatus. 4,608,610, Cl. 358-324.000.

Tatsumi, Masami: *See—*
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, 4,608,535, Cl. 324-244.000.

Tavss, Edward A.; and Carroll, David L., to Colgate-Palmolive Company. Laminated substrate and collapsible dispensing container made therefrom. 4,608,285, Cl. 428-35.000.

Taya, Yoshihiro: *See—*
Higashino, Toshihiro; Mitsunaga, Hirofumi; Nakanishi, Takahiro; and Taya, Yoshihiro, 4,607,614, Cl. 126-299.00E.

TDK Corporation: *See—*
Wakayama, Katsuhiko; and Harada, Hiraku, 4,608,186, Cl. 252-62.520.
Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, 4,608,315, Cl. 428-425.900.

Team, Inc.: *See—*
Harrison, George W., 4,607,469, Cl. 52-220.000.

Tebben, John A. Row crop cultivator including disk and setting indicator therefor. 4,607,705, Cl. 172-430.000.

Technion Research and Development Foundation Ltd: *See—*
Ron, Moshe, 4,607,826, Cl. 266-251.000.

Tecumseh Products Company: *See*—
Fry, Emanuel D., 4,607,503, Cl. 62-503.000.
Teeter, Robert G., to Board of Regents for Oklahoma State Univ. Composition and method for treating heat stress. 4,608,257, Cl. 424-166.000.
Tektronix, Inc.: *See*—
Judge, John L., 4,608,690, Cl. 371-21.000.
Teledyne Industries, Inc.: *See*—
Burnham, Robert E., 4,608,492, Cl. 250-372.000.
Leber, Leland C.; and Swigert, David, 4,607,627, Cl. 128-66.000.
Telefonaktiebolaget LM Ericsson: *See*—
Thurenius, Ake G. H., 4,607,910, Cl. 350-96.200.
Teleschow, Wiktor A.: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.
Tellus Maskin AB: *See*—
Jacobsson, Paul, 4,607,994, Cl. 414-10.000.
Tennant Company: *See*—
Dodge, Paul D., 4,608,086, Cl. 106-12.000.
Teranishi, Masatoshi: *See*—
Seike, Noboru; Teranishi, Masatoshi; and Sakai, Minoru, 4,607,619, Cl. 128-4.000.
Terasawa, Akinobu, to Yoshida Kogyo K. K. Curved slide fastener chain and method for producing curved slide fastener. 4,607,425, Cl. 29-408.000.
Terashima, Masahiko: *See*—
Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, 4,608,203, Cl. 530-378.000.
Terui, Mitsuru: *See*—
Kurumizawa, Masao; Terui, Mitsuru; and Yamaguchi, Nobuyasu, 4,608,213, Cl. 264-45.100.
Tessier, Marc: *See*—
de Brebisson, Michel X. M.; and Tessier, Marc, 4,608,588, Cl. 357-34.000.
Testa, Raymond T.: *See*—
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.
Tetzner, Johannes: *See*—
Wessels, Lur; and Tetzner, Johannes, 4,607,661, Cl. 137-512.100.
Texaco Inc.: *See*—
Davis, Marshall E.; and Sung, Rodney L., 4,608,057, Cl. 44-51.000.
Morduchowitz, Abraham; and Ang, Peter G. P., 4,608,133, Cl. 204-59.00R.
Sammells, Anthony F., 4,608,132, Cl. 204-59.00R.
Sellstrom, Kathy B., 4,608,403, Cl. 523-218.000.
Texas Instruments Incorporated: *See*—
Caudel, Edward R.; Magar, Surendar S.; and Gass, Wanda K., 4,608,634, Cl. 364-200.000.
Duvvury, Charvaka; and Hyslop, Adin E., 4,608,670, Cl. 365-205.000.
Texfi Industries, Inc.: *See*—
Gibson, Carroll A., 4,607,667, Cl. 139-429.000.
Texon, Inc.: *See*—
Presto, Alphonse R., 4,608,305, Cl. 428-365.000.
Thacker, Craig E., to Raetec Industries, Inc. Animal litter. 4,607,594, Cl. 119-1.000.
Thalmann, Theo: *See*—
Zwiener, Rudolf; Mathis, Ernst; Thalmann, Theo; and Rohrich, Siegfried, 4,607,666, Cl. 139-115.000.
Theeuwes, Felix: *See*—
Cortese, Richard; and Theeuwes, Felix, 4,608,048, Cl. 604-890.000.
Thirion deBriel, Jacques, to Valeo. Centrifugally operated variable speed drive pulley. 4,608,030, Cl. 474-13.000.
Tholander, Lars H. G., to Aktiebolaget IRO. Weft yarn storing, feeding and measuring device for jet weaving machines. 4,607,668, Cl. 139-452.000.
Thoma, Nandor G.: *See*—
Davis, James W.; Moore, Victor S.; and Thoma, Nandor G., 4,608,649, Cl. 364-491.000.
Thomas J. Lipton Inc.: *See*—
Dutilh, Christian E., 4,608,267, Cl. 426-662.000.
Thomas Jefferson University: *See*—
Osterholm, Jewell L., 4,608,635, Cl. 364-414.000.
Thomas, Kenneth D.: *See*—
Friedman, Michael S.; Thomas, Kenneth D.; and Chan, Philip T., 4,608,559, Cl. 340-825.500.
Thomas, Roy E. Apparatus for removing truck brake drum. 4,607,823, Cl. 254-134.000.
Thompson, William B., to Varian Associates, Inc. Dual filament ion source with improved beam characteristics. 4,608,513, Cl. 313-359.100.
Thomson-CGR: *See*—
Gabbay, Emile; and Plessis, Andre , 4,608,707, Cl. 378-132.000.
Thorson, Russell E.: *See*—
Schroth, Carl G.; and Thorson, Russell E., 4,608,115, Cl. 156-519.000.
Thrane, David T.: *See*—
Turpin, Edward T.; and Thrane, David T., 4,608,314, Cl. 428-425.800.
Threewitt, N. Bruce, to Advanced Micro Devices, Inc. Semiconductor memory device for serial scan applications. 4,608,678, Cl. 365-189.000.
Thurenius, Ake G. H., to Telefonaktiebolaget LM Ericsson. Optical fiber switch having a movable fiber secured to a slide which is indirectly moved by a magnetic armature. 4,607,910, Cl. 350-96.200.
Thureson, Gary R.; and Gladden, Ernest L., to Ensign-Bickford Industries, Inc. Laminated fuse and manufacturing process therefor. 4,607,573, Cl. 102-275.800.
Tilston, John R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Combustion chamber wall cooling. 4,607,487, Cl. 60-752.000.
Tinnes, Bernhard; and Kreuzberg, Heinz, to Metacon AG. Process and apparatus for controlling a continuous casting plant. 4,607,681, Cl. 164-453.000.
Tinucci, Laura: *See*—
Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, 4,608,441, Cl. 562-466.000.
Titoff, Juha: *See*—
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.
Tkachev, Valentin N.: *See*—
Yarmashev, Jury N.; Zapandi, Vladimir A.; and Tkachev, Valentin N., 4,607,480, Cl. 130-27.00T.
TMC Corporation: *See*—
Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, 4,607,859, Cl. 280-632.000.
Toa Eiyo Litd.: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Watanabe, Koh; Tokashiki, Michihide; and Wada, Sadao, 4,608,173, Cl. 210-502.100.
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, to Hitachi, Ltd. Ceramic wiring board and process for producing the same. 4,608,316, Cl. 428-446.000.
Togawa, Jiro, to Nippon Chemi-Con Corporation. Electric power unit. 4,608,500, Cl. 307-72.000.
Tokashiki, Michihide: *See*—
Watanabe, Koh; Tokashiki, Michihide; and Wada, Sadao, 4,608,173, Cl. 210-502.100.
Tokico Ltd.: *See*—
Kobayashi, Kinzo, 4,607,728, Cl. 188-73.380.
Tokuda, Shoichi: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.
Tokyo Juki Industrial Co., Ltd.: *See*—
Honma, Yoshiaki, 4,607,587, Cl. 118-37.000.
Tokyo Sanyo Electric Co., Ltd.: *See*—
Awane, Misao; Hara, Seiji; and Kobayashi, Satoshi, 4,608,487, Cl. 235-383.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hasebe, Kouki, 4,608,660, Cl. 364-768.000.
Hirose, Nagayoshi; Kido, Sumiaki; and Fuzita, Yoshiharu, 4,608,488, Cl. 235-384.000.
Ishihara, Atsushi; and Yoshimaru, Tomohisa, 4,607,956, Cl. 356-375.000.
Miyaji, Yoshimori; Fujiki, Hirokazu; and Takahashi, Fumio, 4,608,593, Cl. 358-10.000.
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, 4,607,689, Cl. 165-110.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,607,651, Cl. 134-62.000.
Ohno, Jun-ichi; and Konishi, Satoshi, 4,608,668, Cl. 365-200.000.
Tanuma, Chiaki, 4,608,506, Cl. 310-315.000.
Uchida, Yukimasa, 4,608,666, Cl. 365-182.000.
Toldi, George. Wok adapter. 4,607,613, Cl. 126-215.000.
Tomac, Zeljko. Device for cooling containers, for instance beverage bottles or beverage cans, arranged in a wrapping. 4,607,502, Cl. 62-294.000.
Tominaga, Kazutoshi, to Kabushiki Kaisha Tominaga Jyushikogyosho. Air pump. 4,608,000, Cl. 417-413.000.
Tominaga, Takashi: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.
Tomioka, Tadao: *See*—
Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ciita, Kihachiro; and Takeuchi, Masakazu, 4,608,127, Cl. 203-48.000.
Toray Industries, Inc.: *See*—
Hishimuma, Sumio; and Kanno, Katsuo, 4,607,409, Cl. 8-152.000.
Ohbayashi, Gentaro; Umemoto, Susumu; and Hiramoto, Hiroo, 4,608,333, Cl. 430-281.000.
Toray Silicone Company, Ltd.: *See*—
Hamada, Mitsuo; and Higuchi, Kazuo, 4,608,395, Cl. 521-92.000.
Toriguchi, Michio: *See*—
Sugihara, Isao; Nishijima, Akio; and Toriguchi, Michio, 4,608,244, Cl. 423-445.000.
Tosaki, Hiromi: *See*—
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, 4,608,316, Cl. 428-446.000.
Toshiba Kikai Kabushiki Kaisha: *See*—
Sasaki, Junichi, 4,608,661, Cl. 364-900.000.
Tosswill, Christopher H., to Galileo Electro-Optics Corp. Middle-infrared image intensifier. 4,608,519, Cl. 313-528.000.
Towfigh, Keivan. Flat folded female urinary aid. 4,608,046, Cl. 604-329.000.

Toyo Kohan Co., Ltd.: *See*—
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,608,130, Cl. 204-27.000.
Toyo Sanso Co., Ltd.: *See*—
Fujimoto, Kiyokatsu; Shibuya, Kazunobu; and Urata, Tetsukazu, 4,607,495, Cl. 62-63.000.
Toyo Soda Manufacturing Company Limited: *See*—
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.
Toyoda Gosei Co., Ltd.: *See*—
Hayashi, Keizo; and Hasegawa, Hitoshi, 4,608,005, Cl. 425-192.00R.
Toyoda Koki Kabushiki Kaisha: *See*—
Niwa, Kuniyuki; and Fujimura, Yoshiyuki, 4,608,645, Cl. 364-474.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Kobayashi, Nobuyuki; Ito, Toshimitsu; and Norota, Kazuhiko, 4,607,603, Cl. 123-492.000.
Mori, Katsunori; Shimoda, Takuji; and Seo, Kiyokazu, 4,607,879, Cl. 296-201.000.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,607,456, Cl. 49-352.000.
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.
Yoshizaki, Kouji, 4,607,600, Cl. 123-90.160.
Toyotomi Kogyo Co., Ltd.: *See*—
Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,608,010, Cl. 431-88.000.
Trahan, Albert J.; and Vajda, Vladimir, to Emhart Industries, Inc. Plunger mechanism for use in a glassware forming machine. 4,608,075, Cl. 65-362.000.
Trajin, Jean-Paul: *See*—
Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, 4,608,372, Cl. 514-187.000.
Trelleborg AB: *See*—
Rosen, Johnny, 4,608,496, Cl. 250-561.000.
Tremoureux, Yves; and Reynaud, Jean-Luc, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Process for improving the corrosion resistance of ferrous metal parts. 4,608,092, Cl. 148-6.110.
Trent, Robert H.; and Oakley, W. Ray, to New Tech Oil, Inc. Method of recovering hydrocarbon using mining assisted methods. 4,607,888, Cl. 299-2.000.
Trimmer Machine Co., Inc.: *See*—
Raybuck, William B., 4,607,831, Cl. 270-58.000.
Trinity Foundation: *See*—
Christine, William C., 4,607,764, Cl. 222-207.000.
Troyer, A. Forrest, to DeKalb-Pfizer Genetics. Hybrid corn plants with improved standability. 4,607,453, Cl. 47-58.000.
Trumpf GmbH & Co.: *See*—
Walser, Hans-Heinrich, 4,607,709, Cl. 173-170.000.
TRW Inc.: *See*—
Law, Hsiang-Yi D.; and Rezek, Edward A., 4,608,696, Cl. 372-50.000.
Tsai, Mei-Yuan; Jacoby, John E.; and Laemmle, Joseph T., to Aluminum Company of America. Providing oligomer moisture barrier in direct chill casting of aluminum-lithium alloy. 4,607,679, Cl. 164-5.000.
Tseo, Gus: *See*—
Vanderveen, Timothy W.; and Tseo, Gus, 4,608,042, Cl. 604-81.000.
Tsikos, Constantine, to Siemens Corporate Research & Support Inc. Apparatus for accumulating and permanently storing statistical information. 4,608,638, Cl. 364-424.000.
Tsubata, Hisayasu: *See*—
Hamashima, Tatsuo; Tsubata, Hisayasu; and Hagiwara, Michiaki, 4,607,683, Cl. 164-463.000.
Tsuchiya, Masahiro; and Mori, Masaharu, to Clarion Co., Ltd. Phase-shift keying demodulator. 4,608,540, Cl. 329-107.000.
Tsuda, Hiroshi: *See*—
Arima, Sumitsugu; Tsuda, Hiroshi; and Nagashima, Hideyuki, 4,607,539, Cl. 74-492.000.
Tsumagari, Masato: *See*—
Kouketsu, Eiji; and Tsumagari, Masato, 4,607,864, Cl. 280-808.000.
Tsutsui, Eiji: *See*—
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.
Tuccella, Jean: *See*—
Karinthi, Pierre; Gardent, Maurice; Regnier, Colette; and Tuccella, Jean, 4,607,488, Cl. 62-45.000.
Tucel Industries, Inc.: *See*—
Lewis, John C., Jr., 4,607,411, Cl. 15-117.000.
Tuda, Goro: *See*—
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.
Turci, Edmondo; and Fubini, Guido, to Aeritalia Societa Aerospaziale Italiana p.A. Docking system for space modules. 4,607,815, Cl. 244-161.000.
Turner, Michael D.; and Roch, Jacques, to General Signal Corporation. Height measuring system. 4,607,525, Cl. 73-37.500.
Turpin, Edward T.; and Thrane, David T., to SCM Corporation. Acrylic and acrylic/epoxy copolymer compositions as self-curing cathodic electrocoating vehicles. 4,608,314, Cl. 428-425.800.
Twilley, Robert C., Jr., to Babcock & Wilcox Company, The. Abnormal transient display system for nuclear reactor operation. 4,608,223, Cl. 376-247.000.
Tyler, Derek E.: *See*—
Dantzig, Jonathan A.; and Tyler, Derek E., 4,607,682, Cl. 164-418.000.
Tzu-Chun, Huang Y. Reclining mechanism for easy chair. 4,607,883, Cl. 297-317.000.
U.S.D. Corp: *See*—
Faulconer, Mark, 4,607,398, Cl. 2-452.000.
Uchida, Yukimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory. 4,608,666, Cl. 365-182.000.
Uchikawa, Fusaoki: *See*—
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, 4,607,721, Cl. 181-249.000.
Uchikawa, Fusoaki: *See*—
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusoaki, 4,607,722, Cl. 181-252.000.
Uchiyama, Hiroaki; Ibuchi, Yoshiaki; and Fujiwara, Katsuyoshi, to Sharp Kabushiki Kaisha. Automatic dual electrophotographic copying machine. 4,607,946, Cl. 355-14.00R.
Ueda, Ikuo; and Kato, Masayuki, to Fujisawa Pharmaceutical Co., Ltd. Quinazolinone derivatives, processes for the preparation thereof and pharmaceutical composition comprising the same. 4,608,375, Cl. 514-218.000.
Uehara, Hiromichi: *See*—
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.
Ueno, Hideo; Kuno, Hiroshi; and Hamabe, Yoshifumi, to Brother Kogyo Kabushiki Kaisha. Electronic typewriter equipped with text memory which saves format data while deleting a line. 4,607,966, Cl. 400-63.000.
Ueno, Hidetoshi: *See*—
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.
Uhland, Eberhard: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.
Uhlig, Raimer: *See*—
Mauritz, Bernd; and Uhlig, Raimer, 4,607,992, Cl. 411-45.000.
Uhlig, Uwe: *See*—
Janutta, Reinhard; Uhlig, Uwe; and Redeker, Werner, 4,607,607, Cl. 125-11.0CD.
Uittenbogaard, Maurice: *See*—
Meek, Jan; Uittenbogaard, Maurice; and Michelsen, Finn C., 4,607,983, Cl. 405-204.000.
Uittenbogaart, Gustaaf A.: *See*—
Rijpkema, Jan; and Uittenbogaart, Gustaaf A., 4,608,006, Cl. 425-347.000.
Ullman, Fred E.: *See*—
Virta, Arthur W.; and Ullman, Fred E., 4,608,038, Cl. 493-29.000.
Ulrickson, Michael A., to United States of America, Energy. Multichannel infrared thermometer. 4,607,963, Cl. 374-131.000.
Umbarger, C. John: *See*—
Wolf, Michael A.; Waechter, David A.; and Umbarger, C. John, 4,608,655, Cl. 364-569.000.
Umebayashi, Kazuyuki; and Suzumura, Nobuyasu, to Aisin Seiki Kabushikikaisha. Electric signal transmission system on a road vehicle. 4,608,550, Cl. 340-22.000.
Umeda, Hiroyuki: *See*—
Wakui, Yoshiaki; and Umeda, Hiroyuki, 4,608,616, Cl. 360-132.000.
Umemoto, Susumu: *See*—
Ohbayashi, Gentaro; Umemoto, Susumu; and Hiramoto, Hiroo, 4,608,333, Cl. 430-281.000.
Umemoto, Tadahiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method for heat treating pipe with double-pipe section. 4,608,101, Cl. 148-127.000.
Umemura, Shizuo; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Ferromagnetic particles with stable magnetic characteristics and method of preparing same. 4,608,093, Cl. 148-6.350.
Union Carbide Corporation: *See*—
Craig, Todd A.; and Jachetta, John J., 4,608,082, Cl. 71-118.000.
Gardner, Hugh C.; Brode, George L.; and Cotter, Robert J., 4,608,404, Cl. 523-400.000.
Kurtz, Stuart J.; Roberts, Ernest H.; and Lucchesi, Peter J., 4,608,221, Cl. 264-556.000.
Lee, Young-Jin, 4,608,448, Cl. 570-109.000.
Martin, Robert W., 4,608,401, Cl. 523-205.000.
Schilling, Curtis L., Jr.; and Williams, Thomas C., 4,608,242, Cl. 423-345.000.
Schumm, Brooke, Jr., 4,608,279, Cl. 429-224.000.
Volles, Warren K.; and Cusher, Nelson A., 4,608,061, Cl. 55-26.000.
United Aircraft Products, Inc.: *See*—
Wiard, Maxwell R.; and Michael, Kenneth L., 4,607,684, Cl. 165-70.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Tilston, John R., 4,607,487, Cl. 60-752.000.
United States of America
Agriculture: *See*—

Kangas, Vernon W.; Kangas, Roy J.; and Matson, Edsel D., 4,607,672, Cl. 144-2.00R.

Air Force: *See—*
Bryant, Steve M.; and Cole, Lanier G., 4,608,567, Cl. 343-7.00A.
Holt, James F., 4,608,627, Cl. 363-131.000.
Hufford, Diane K., 4,608,112, Cl. 156-345.000.
Johnson, Alfred L., 4,607,424, Cl. 29-157.30R.
Lee, Roger K., 4,607,458, Cl. 51-119.000.
Webster, Carson W.; and Stilwell, Robert K., 4,608,574, Cl. 343-895.000.

Energy: *See—*
Deichelbohrer, Paul R., 4,608,477, Cl. 219-69.00V.
Hoh, Joseph C., 4,607,852, Cl. 277-1.000.
Martin, H. Lee; and Killough, Stephen M., 4,608,526, Cl. 318-628.000.
Oakley, David J.; and Feld, Sam H., 4,607,778, Cl. 228-2.500.
Ulrickson, Michael A., 4,607,963, Cl. 374-131.000.

National Aeronautics and Space Administration: *See—*
Weinberg, Irving; and Brandhorst, Henry W., Jr., 4,608,452, Cl. 136-261.000.

Navy: *See—*
Burns, William K.; and Villarruel, Carl A., 4,607,912, Cl. 350-96.300.
Ennis, David G.; and Smith, John M., 4,608,566, Cl. 343-5.0PD.
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, 4,608,537, Cl. 328-237.000.

U.S. Philips Corporation: *See—*
Barclay, David; and Burgess, Peter H., 4,608,511, Cl. 313-93.000.
de Brebisson, Michel X. M.; and Tessier, Marc, 4,608,588, Cl. 357-34.000.
Dijkmans, Eise C.; Graffenberger, Wilhelm; and Kilian, Ernst A., 4,608,502, Cl. 307-243.000.
Grantham-Hill, Timothy R., 4,608,602, Cl. 358-148.000.
Jansen, Gerardus L. M., 4,607,913, Cl. 350-247.000.
Nijman, Aloysius J.; and Schoofs, Franciscus A. C. M., 4,608,461, Cl. 179-16.0AA.
Nordholt, Ernst H.; and Boon, Cornelis A. M., 4,608,544, Cl. 331-109.000.
Van Hemel, Gilbert O. E., 4,607,593, Cl. 118-719.000.
Ward, Rodney, 4,608,332, Cl. 430-296.000.

United Technologies Corporation: *See—*
Cole, Edward F., 4,607,486, Cl. 60-734.000.
Miller, John A.; and Athey, Roy L., 4,608,094, Cl. 148-11.50N.
Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, 4,607,421, Cl. 29-157.10R.

Unitika Ltd.: *See—*
Hamashima, Tatsuo; Tsubata, Hisayasu; and Hagiwara, Michiaki, 4,607,683, Cl. 164-463.000.

University College London: *See—*
Arthur, Jonathan R. F.; and Dunstan, Trebilcock, 4,607,532, Cl. 73-819.000.

University of California, Regents of the: *See—*
Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., 4,607,639, Cl. 128-419.00E.
Wolf, Michael A.; Waechter, David A.; and Umbarger, C. John, 4,608,655, Cl. 364-569.000.

University of Georgia Research Foundation, Inc., The: *See—*
Maw, Bryan W.; and Brewer, Harold L., 4,607,452, Cl. 47-1.00R.

University of South Florida, The: *See—*
Busot, J. Carlos; and Hill, Peter W., 4,607,595, Cl. 119-2.000.

University of Southern California: *See—*
Engel, W. King, 4,608,365, Cl. 514-18.000.

University of Waterloo: *See—*
Wynnyckyj, John R.; and Rhodes, Edward, 4,607,961, Cl. 374-30.000.

UOP Inc.: *See—*
Abrevaya, Hayim; and Imai, Tamotsu, 4,608,360, Cl. 502-226.000.
Kulprathipanja, Santi; and Kulkarni, Sudhir S., 4,608,060, Cl. 55-16.000.

Upp, Daniel C., to ITT Corporation. Digital switching systems employing multi-channel frame association apparatus. 4,608,684, Cl. 370-58.000.

Uppencamp, George L.: *See—*
Brasted, Lee K.; and Uppencamp, George L., 4,607,982, Cl. 405-204.000.

Urata, Tetsukazu: *See—*
Fujimoto, Kiyokatsu; Shibuya, Kazunobu; and Urata, Tetsukazu, 4,607,495, Cl. 62-63.000.

Urffer, Daniel, to Societe Europeenne des Produits Refractaires. Propping agent based on zirconia and silica for deep geological fractures. 4,607,697, Cl. 166-280.000.

Urlik, Randall G., to Goldberg Brothers, Inc. Film winding and rewinding apparatus. 4,607,804, Cl. 242-67.400.

Usher, Peter P., to Metex Corporation. Method of making composite wire mesh seal. 4,607,851, Cl. 277-1.000.

USM Corporation: *See—*
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.

UTI Corporation: *See—*
Goodfellow, Glenn B., 4,607,515, Cl. 72-358.000.

Uttenthaler, Josef, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Radiator-fan system, particularly for buses having rear-mounted engines. 4,607,714, Cl. 180-68.100.

V-Tech, Inc.: *See—*
Miller, Irvin E., 4,607,921, Cl. 350-536.000.

Vaden, James L., to Brand-Rex Company. Modular plug. 4,607,905, Cl. 339-176.00M.

Vahabzadeh, Hamid, to General Motors Corporation. Control system for a continuously variable transmission. 4,608,031, Cl. 474-17.000.

Vaidya, Jayant G.: *See—*
Glennon, Timothy F.; and Vaidya, Jayant G., 4,608,527, Cl. 318-685.000.

Vail, Curtis F., to Hoover Universal, Inc. Encapsulated bolster. 4,607,887, Cl. 297-452.000.

Vajda, Vladimir: *See—*
Trahan, Albert J.; and Vajda, Vladimir, 4,608,075, Cl. 65-362.000.

Valenti, Dante, to IN-PAK s.r.l. Container for receiving various articles, in particular cylindrical articles. 4,607,750, Cl. 206-443.000.

Valeo: *See—*
Thirion deBriel, Jacques, 4,608,030, Cl. 474-13.000.

Valmet OY: *See—*
Autio, Markku, 4,608,125, Cl. 162-273.000.
Mauranen, Pekka; and Vedenpaa, Timo, 4,608,124, Cl. 162-193.000.

VanAuwelaer, James M.: *See—*
Shellhouse, Wayne L.; and VanAuwelaer, James M., 4,607,707, Cl. 172-764.000.

Vance, Dennis W., to Vivid Systems Incorporated. Video projector focus adjustment mechanism. 4,607,924, Cl. 353-101.000.

Vander Giessen, Michael J.: *See—*
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,608,111, Cl. 156-306.600.

Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., to GTE Products Corporation. Recovery of cobalt. 4,608,235, Cl. 423-53.000.

Vanderpool, Clarence D.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., 4,608,084, Cl. 75-101.00R.

Vanderveen, Timothy W.; and Tseo, Gus, to Warner-Lambert Company. Apparatus for sequential infusion of medical solutions. 4,608,042, Cl. 604-81.000.

Van Hemel, Gilbert O. E., to U.S. Philips Corporation. Apparatus for processing articles in a controlled environment. 4,607,593, Cl. 118-719.000.

Van Kampen, Craig L.; and Hockert, Eric N., to Minnesota Mining and Manufacturing Company. Implant with attachment surface. 4,608,052, Cl. 623-22.000.

van Klinken, Peter G., to Stevin Construction Inc. Method for constructing a screen that obstructs the flow of subsoil water. 4,607,981, Cl. 405-52.000.

Vanlier, Kenneth E. Condensing and collecting vapors emanating from a land surface. 4,607,501, Cl. 62-288.000.

Varaprath, Padmakumari J., to Dow Corning Corporation. Acylamino silicon compounds, their use and preparation. 4,608,270, Cl. 427-35.000.

Varian Associates, Inc.: *See—*
McDowell, Hunter L., 4,608,520, Cl. 315-39.300.
Thompson, William B., 4,608,513, Cl. 313-359.100.

Varnelis, Edmund K.; and Siewert, Robert L. Pivot joint. 4,607,977, Cl. 403-154.000.

Vaughan, Ronald J., deceased; and by Bank of America NT&SA, administrator, to Chevron Research Company. Oxidation of carbonaceous material and electrodeposition of a metal at the cathode of an electrolytic cell. 4,608,136, Cl. 204-106.000.

Vaughan, Ronald J., deceased; and by Bank of America NT&SA, administrator, to Chevron Research Company. Production of hydrogen at the cathode of an electrolytic cell. 4,608,137, Cl. 204-129.000.

Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Schumann, Roland, 4,607,830, Cl. 270-41.000.

VEBA-GLAS AG: *See—*
Knoth, Werner-Dieter; Hullen, Helmut; and Kopatz, Klaus, 4,608,074, Cl. 65-164.000.

Vedenpaa, Timo: *See—*
Mauranen, Pekka; and Vedenpaa, Timo, 4,608,124, Cl. 162-193.000.

Vento, Jorma: *See—*
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.

Verbatim Corporation: *See—*
Sturtevant-Stuart, Ronald M., 4,608,618, Cl. 360-135.000.

Verdier, Patrick: *See—*
Laurent, Yves; and Verdier, Patrick, 4,608,352, Cl. 501-73.000.

Vermont American Corporation: *See—*
McCord, Wilfred M., Jr., 4,607,673, Cl. 144-144.50R.

Vetco Offshoe Industries, Inc.: *See—*
Gundersen, Dag H. Z., 4,607,701, Cl. 166-368.000.

Vetco Offshore Industries, Inc.: *See—*
Hughes, David W., 4,607,865, Cl. 285-18.000.

Victor Company of Japan: *See—*
Ota, Yoshihiko, 4,608,611, Cl. 358-328.000.

Victor Company of Japan, Ltd.: *See—*
Sugiyama, Hiroyuki, 4,608,600, Cl. 358-138.000.
Tatsuguchi, Kazuo, 4,608,610, Cl. 358-324.000.
Wakui, Yoshiaki; and Umeda, Hiroyuki, 4,608,616, Cl. 360-132.000.

Viennatone Gesellschaft m.b.H.: *See—*
Hardt, Heinz, 4,607,720, Cl. 181-135.000.

Vikio , Pentti: *See—*
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.

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Villarruel, Carl A.: *See*—
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Paquet, Claude, 4,607,468, Cl. 52-172.000.

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Vance, Dennis W., 4,607,924, Cl. 353-101.000.

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Obidin, Valery Y.; Zuevs, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

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Roberts, Peter C. T.; and Vu, Tho T., 4,608,672, Cl. 365-230.000.

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Celant, Jean J.; and Bochaton, Francois, 4,608,269, Cl. 427-28.000.

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Schirmer, Henry G., 4,608,302, Cl. 428-349.000.

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Wolf, Michael A.; Waechter, David A.; and Umbarger, C. John, 4,608,655, Cl. 364-569.000.

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Wakui, Yoshiaki; and Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Tape cassette having a lock mechanism for locking a tape protecting lid. 4,608,616, Cl. 360-132.000.

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Keller, Arnold, 4,608,053, Cl. 623-23.000.

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Weaver, Sherry M., 4,607,786, Cl. 229-45.00R.

Walker, Gordon K.: *See*—
Paik, Woo H.; Heller, Jerrold A.; and Walker, Gordon K., 4,608,456, Cl. 179-1.50S.

Wall, Robert G.: *See*—
Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., 4,607,700, Cl. 166-303.000.

Wallace, David A.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.

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Wang, Kuo-Ming. Peanuts harvester and its harvesting method. 4,607,703, Cl. 171-1.000.

Ward, James P.: *See*—
Krampen, Adalbert A.; Ellis, Delbert O.; Bjerke, Robert K.; and Ward, James P., 4,608,102, Cl. 149-92.000.

Ward, Jean R., to Pencept, Inc. Method and apparatus for removing noise at the ends of a stroke caused by retracing. 4,608,658, Cl. 364-574.000.

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Johnson, Judith L.; and Showalter, Hollis D., 4,608,439, Cl. 548-357.000.
Knecht, Adolf; and Augart, Helmut, 4,608,248, Cl. 424-19.000.
Siecke, Albert E.; and Janos, Edward, 4,607,483, Cl. 57-334.000.
Vanderveen, Timothy W.; and Tseo, Gus, 4,608,042, Cl. 604-81.000.

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Schafsteller, Helmut, 4,608,654, Cl. 364-559.000.

Watanabe, Koh; Tokashiki, Michihide; and Wada, Sadao, to Toa Nenryo Kogyo Kabushiki Kaisha. Filter. 4,608,173, Cl. 210-502.100.

Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering Ltd. Method for editing document. 4,608,662, Cl. 364-900.000.

Watanabe, Takao, to Nippon Electric Co., Ltd. Pattern matching system. 4,608,708, Cl. 381-43.000.

Watanabe, Yoshitane; Suzuki, Keitaro; and Suda, Susumu, to Nissan Chemical Industries, Ltd. Flame retardant for halogen-containing vinyl resins. 4,608,198, Cl. 252-609.000.

Watashi, Masahiro; Kimura, Hiroshi; Shibata, Kiyoshi; Hisajima, Masahiko; and Yamamoto, Kiyonori, to Mita Industrial Co., Ltd. Power transmitting device in a copying machine. 4,607,734, Cl. 192-67.00R.

Water Services of America, Inc.: *See*—
Baron, Walter J.; and Cleaver, Laird C., 4,607,686, Cl. 165-95.000.

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Weaver, Sherry M., to Waldorf Corporation. Double insert lock carton and blank therefor. 4,607,786, Cl. 229-45.00R.

Web Italia S.r.l.: *See*—
Ghisalberti, Luigi; and Fumagalli, Marco, 4,608,158, Cl. 210-96.100.

Weber, Stevan L., to Mobil Oil Corporation. High sweep efficiency steam drive oil recovery method. 4,607,695, Cl. 166-272.000.

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Wright, Herschel E.; Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., 4,607,551, Cl. 83-54.000.

Weeks, James B.: *See*—
Payne, Roger E.; and Weeks, James B., 4,607,892, Cl. 305-56.000.

Wegener, Ingo: *See*—
Koch, Karlheinz; Wegener, Ingo; and Giesen, Brigitte, 4,608,189, Cl. 252-174.220.

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Biermann, Kurt; Steppat, Gerhard; and Wehmeyer, Bodo, 4,607,583, Cl. 112-130.000.

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Wheeler, Robert C., 4,607,621, Cl. 128-6.000.

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Zulauf, Karlheinz; and Steigerwald, Franz, 4,607,762, Cl. 222-48.000.

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Rees, Spencer C., 4,607,459, Cl. 51-102.000.

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Whittlestone, Walter G.; Wenham, Douglas L.; and Foreman, James D. M., 4,607,596, Cl. 119-14.020.

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Wessel, Gerhard: *See*—
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.

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Westermeyer, Joseph, to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co. Automatic switch with impact-armature tripping device. 4,608,546, Cl. 335-20.000.

Westinghouse Electric Corp.: *See*—
Eggers, Alfred G., 4,607,990, Cl. 410-2.000.
Fox, David A.; and Baker, Donal E., 4,608,626, Cl. 363-56.000.
Hines, George, 4,608,620, Cl. 361-154.000.
Young, Steven J., 4,607,430, Cl. 29-868.000.

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Klein, Edward P.; and Nissan, Alfred H., 4,608,122, Cl. 162-60.000.

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Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.

White, Ruth A. Bag with bow. 4,608,283, Cl. 428-4.000.

White, Thomas E.; and Fowler, Brooks C., to E-Systems, Inc. Method and apparatus for determining the noise power ratio (NPR) of a unit under test. 4,608,647, Cl. 364-481.000.

Whiteside, Robert C.; and Arends, Albert W., to John Brown Inc. Thermoforming equipment for differential pressure forming products in thermoplastic material. 4,608,009, Cl. 425-590.000.

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Blomley, Peter F.; Arton, Kenneth A.; Whittaker, Edward J.; and Lefevre, Andrew P., 4,608,462, Cl. 179-81.00B.

Whittlestone, Walter G.; Wenham, Douglas L.; and Foreman, James D. M. Milking methods and apparatus. 4,607,596, Cl. 119-14.020.

Whitwell, Robert J.: *See*—
Bolton, Theodore S.; and Whitwell, Robert J., 4,607,499, Cl. 62-262.000.

Wiard, Maxwell R.; and Michael, Kenneth L., to United Aircraft Products, Inc. Leak protected heat exchanger. 4,607,684, Cl. 165-70.000.

Widen, Melinda A.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.

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Bergin, Ralph M.; Katz, Emanuel E.; and Widicus, Warren A., 4,608,263, Cl. 426-303.000.

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Hieber, Konrad; Stolz, Manfred; and Wieczorek, Claudia, 4,608,271, Cl. 427-38.000.

Wiedemann, Fritz, deceased (by Wiedmann, Ingrid, heiress); Kampe, Wolfgang; Dietmann, Karl, deceased (by Dietmann, Lieselotte, heiress); and Sponer, Gisbert, to Boehringer Mannheim GmbH. Cardioactive pyrazole and imidazole aryloxypropanolamines. 4,608,383, Cl. 514-407.000.

Wiedmann, Ingrid, heiress: *See*—
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

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Wierzbicki, Michel; and Bure, Jacques, to Adir, S.A.R.L. Thieno[2,3-b] pyrrole compounds and analgesic use thereof. 4,608,384, Cl. 514-413.000.

Wiese, Hans-Holger, to Hans-Holger Wiese GmbH & Co. Pendulum-mounted bucket with control cam for a bucket conveyor. 4,607,745, Cl. 198-706.000.

Wilhite, John E.: *See*—
Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., 4,608,633, Cl. 364-200.000.

Wilke, Rudolf. Fastening arrangement for releasably interconnectable mounted and mounting members, and process for making the same. 4,607,973, Cl. 403-9.000.

Willamette Industries: *See*—
Croley, Thomas E., 4,607,785, Cl. 229-41.00B.

Williams, Frederick W., to Ski-Ace Pty. Limited. Water ski. 4,608,023, Cl. 441-68.000.

Williams, Lance; and Bloomenthal, Jules, to New York Institute of Technology. System for colorizing video with both pseudo-colors and selected colors. 4,608,596, Cl. 358-81.000.

Williams, Patrick J.: *See*—
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Williams, Paul R., Jr.; Burt, Russell V.; and Golden, Ronald, to Celanese Corporation. Stable aqueous epoxy resin dispersions. 4,608,406, Cl. 523-424.000.

Williams, Ronald D.: *See*—
Kirtley, James L., Jr.; Sterling, Thomas L.; and Williams, Ronald D., 4,608,700, Cl. 375-36.000.

Williams, Samuel B., to Marco Manufacturing, Inc. Pipe spacer. 4,607,665, Cl. 138-148.000.

Williams, Thomas C.: *See*—
Schilling, Curtis L., Jr.; and Williams, Thomas C., 4,608,242, Cl. 423-345.000.

Willis, Anthony L.: *See*—
Kluge, Arthur F.; Willis, Anthony L.; and O'Yang, Counde, 4,608,388, Cl. 514-510.000.

Wilson, Charles R.: *See*—
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Wilson, Owen H.; and Pecak, Tadeusz, to NCR Corporation. Multiple drive sheet moving apparatus. 4,607,835, Cl. 271-227.000.

Wilson, Robert B. Dye composition and method of use thereof for coloring thermoplastic materials. 4,608,056, Cl. 8-506.000.

Wingen, Franz: *See*—
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.

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Wistar Institute, The: *See*—
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Witco Chemical Corporation: *See*—
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Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, to TMC Corporation. Safety ski binding. 4,607,859, Cl. 280-632.000.

Witty, Thomas R.; Curry, Robert E.; and Smith, Roger E., to Becton, Dickinson and Company. Self-contained reagent package device for an assay. 4,608,231, Cl. 422-61.000.

Wolf, Michael A.; Waechter, David A.; and Umbarger, C. John, to University of California, The Regents of the. Wristwatch dosimeter. 4,608,655, Cl. 364-569.000.

Wolf, Morris A. Merchandising display system and method. 4,607,754, Cl. 211-183.000.

Wolfson, Stanislaw A.: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

Wolsten's Computer Devices, Inc.: *See*—
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Wolter, Eric H.: *See*—
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Wong, Thomas H.; and Chu, John W., to Advanced Micro Devices, Inc. Apparatus for driving first and second devices. 4,608,503, Cl. 307-270.000.

Wood, Edward T., to Completion Tool Company. Pipe configuration compatible with CBL. 4,607,698, Cl. 166-285.000.

Wood, Errol A. Oat crimper. 4,608,007, Cl. 425-363.000.

Wood, Robert J.: *See*—
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, 4,608,432, Cl. 528-274.000.

Wood's Welding Inc.: *See*—
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Woog, Gunter. Effluent precipitation and neutralization chamber. 4,608,177, Cl. 210-738.000.

Wool Development International Ltd.: *See*—
Gibson, James D. M., 4,607,589, Cl. 118-201.000.

Wooten, Jack, to Faultless PCBS. Method of manufacturing circuit boards. 4,608,274, Cl. 427-96.000.

Wosegien, Bernd: *See*—
Staltmeir, Josef; and Wosegien, Bernd, 4,607,729, Cl. 188-153.00R.

Wright, Carl A. Dispenser for a collapsible tube. 4,607,763, Cl. 222-102.000.

Wright, George M.; and Talcott, Thomas D., to Innovative Surgical Products, Inc. Correction of defects in the eye and compositions therefor. 4,608,050, Cl. 623-6.000.

Wright, Herschel E.; Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., to Beckman Instruments, Inc. Centrifuge tube-cutting apparatus and method. 4,607,551, Cl. 83-54.000.

Wright, Joseph H.: *See*—
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Wright, Steven F.; and McGurk, Joseph E., to Molex Incorporated. Apparatus for dispensing solid components from a flexible substrate assembly. 4,607,761, Cl. 221-25.000.

Wright, William H. Food decoy mat for waterfowl. 4,607,447, Cl. 43-3.000.

Wu, Yulin, to Phillips Petroleum Company. Composition and method for corrosion inhibition. 4,608,191, Cl. 252-391.000.

Wuerzer, Bruno: *See*—
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Wulff, Gunther, to Swiss Aluminium Ltd. Performing contact-free measurement on a workpiece. 4,607,960, Cl. 374-7.000.

Wynnyckyj, John R.; and Rhodes, Edward, to University of Waterloo. Heat flux meter. 4,607,961, Cl. 374-30.000.

Xerox Corporation: *See*—
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Schwarz, William M.; and Pochan, John M., 4,608,328, Cl. 430-101.000.
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Yablonovitch, Eli: *See*—
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Yagi, Norio: *See*—
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Yajima, Yasuo: *See*—
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Yamaguchi, Kunio: *See*—
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Yamaguchi, Nobuyasu: *See*—
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Yamamoto, Haruyasu; and Okabe, Takayuki, to Sumitomo Chemical Company, Limited. Trithiophosphoric acid ester as a soil pesticide. 4,608,369, Cl. 514-144.000.
Yamamoto, Hidehiko, to Sharp Kabushiki Kaisha. Interface circuit for interconnecting peripherals to an information processing device. 4,608,504, Cl. 307-442.000.
Yamamoto, Kazuo: *See*—
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Yamamoto, Takashi; Kitajima, Houdo; and Takahashi, Hiroyuki. Length polarized, end electroded piezoelectric resonator. 4,608,509, Cl. 310-357.000.
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Yamanaka, Kiyoyuki, to Taiko Pharmaceutical Co., Ltd. Medicament for treatment of diarrhea. 4,608,258, Cl. 424-195.100.
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Yamanouchi Pharmaceutical Co., Ltd.: *See*—
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Yamazaki, Kiyoyasu: *See*—
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Yano, Koji: *See*—
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, 4,607,936, Cl. 355-3.0DR.
Yarkin, Andrei A.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.
Yarmashev, Jury N.; Zapandi, Vladimir A.; and Tkachev, Valentin N., to Glavnoe Spetsializirovannoe Konstruktorskoe Bjuro po Mashinam Uborki Zernovykh Kultur i Samokhodnykh Shassi. Axial-flow combine. 4,607,480, Cl. 130-27.00T.
Yasuda, Masayoshi: *See*—
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.
Yealy, Carl F., to Merline Industries, Inc. Cable reel with reinforcing flanges. 4,607,806, Cl. 242-117.000.
Yoakum, George H.; Harris, Curtis C.; Korba, Brent E.; and Lechner, John F. Protoplast fusion method for high-frequency DNA transfection in human cells. 4,608,339, Cl. 435-172.200.
Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, to TDK Corporation. Magnetic recording medium. 4,608,315, Cl. 428-425.900.
Yogo, Kenji; Nakamura, Mamoru; and Nishio, Shigeru, to Aisin Seiki Kabushiki Kaisha. Control valve device. 4,608,208, Cl. 261-39.00R.
Yohe, Thomas L.; and Kyriss, Karl M. Apparatus for purification of contaminated groundwater. 4,608,163, Cl. 210-150.000.
Yokobori, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Output circuit and brushless motor using the same. 4,608,524, Cl. 318-254.000.
Yokokawa, Hidemi; and Fukuzawa, Miyuki, to Sony/Tektronix Corporation. Method of displaying a logic signal. 4,608,652, Cl. 364-521.000.
Yokokawa, Kiyoshi; Koya, Kazuo; and Hosino, Syouji, to Shin-Etsu Chemical Co., Ltd. Method for reducing diameter of a glass rod or tube by drawing. 4,608,071, Cl. 65-13.000.
Yokoo, Mamoru: *See*—
Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, 4,608,438, Cl. 548-341.000.
Yokoshima, Minoru; Ohkubo, Tetsuo; and Kiyomoto, Masayuki, to Nippon Kayaku Kabushiki Kaisha. Novel (meth)acrylate and resin composition comprising the same. 4,608,400, Cl. 522-96.000.
Yokote, Yoshihiro, to NSK-Warner K.K. Passive seat belt system. 4,607,863, Cl. 280-804.000.
Yoneyama, Osamu: *See*—
Oda, Tatsuji; Mamine, Takayoshi; and Yoneyama, Osamu, 4,608,695, Cl. 372-45.000.
Yoshida, Hisayoshi: *See*—
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.
Yoshida, Ken-ich: *See*—
Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, 4,607,578, Cl. 108-145.000.
Yoshida Kogyo K. K.: *See*—
Terasawa, Akinobu, 4,607,425, Cl. 29-408.000.
Yoshida Kogyo K.K.: *See*—
Tanikawa, Koichi; and Takizawa, Toshiaki, 4,607,416, Cl. 24-389.000.
Yoshida, Kunio. Sentence modifiable electronic dictionary and language interpreter. 4,608,665, Cl. 364-900.000.
Yoshida, Ryo: *See*—
Haga, Toru; Nagano, Eiki; Sato, Ryo; and Yoshida, Ryo, 4,608,080, Cl. 71-92.000.
Yoshida, Tadao; and Haneda, Yoshiaki, to Sony Corporation. Apparatus for optically reproducing an information signal from a record disk. 4,608,676, Cl. 369-32.000.
Yoshida, Zenichi; and Miki, Sadao, to Sumitomo Chemical Company, Limited. Catalyst for the isomerization reaction of quadricyclanes to norbornadienes. 4,608,358, Cl. 502-164.000.
Yoshihara, Kunio: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.
Yoshikawa, Toshiyuki: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.
Yoshimaru, Tomohisa: *See*—
Ishihara, Atsushi; and Yoshimaru, Tomohisa, 4,607,956, Cl. 356-375.000.
Yoshimi, Tomohisa: *See*—
Takeo, Yuji; and Yoshimi, Tomohisa, 4,608,551, Cl. 340-53.000.
Yoshimura, Yoshikazu: *See*—
Shiomi, Yasufumi; and Yoshimura, Yoshikazu, 4,608,713, Cl. 455-325.000.
Yoshino, Shigeo; Zenbutsu, Tadashi; and Asami, Hajime, to Shinagawa Refractories Co., Ltd. Heat-resistant inorganic composition. 4,608,087, Cl. 106-18.120.
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, to Mita Industrial Co., Ltd. Control circuit for an electrostatic copying apparatus. 4,607,943, Cl. 355-14.00R.
Yoshizaki, Kouji, to Toyota Jidosha Kabushiki Kaisha. Valve actuating apparatus in internal combustion engine. 4,607,600, Cl. 123-90.160.
Young, Chapman, III. Oscillating pulsed jet generator. 4,607,792, Cl. 239-101.000.
Young, Steven J., to Westinghouse Electric Corp. Method and apparatus for high density wire harness manufacture. 4,607,430, Cl. 29-868.000.
Youssef, Hassan: *See*—
Eudier, Michel; and Youssef, Hassan, 4,608,085, Cl. 75-247.000.
Yovanofski, Trayan. Automatic pool water regulator apparatus. 4,607,399, Cl. 4-508.000.
Yuasa, Yoshio; Naruse, Kazuhiko; and Inaba, Masahito, to Minolta Camera Kabushiki Kaisha. Electronic flash device. 4,608,522, Cl. 315-241.00P.
Yuasa, Yoshitaka: *See*—
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, 4,607,689, Cl. 165-110.000.
Yukimoto, Koji: *See*—
Kobayashi, Osamu; Yukimoto, Koji; and Mikami, Mitsugu, 4,607,650, Cl. 133-5.00R.
Yung, Simon K. C. Contact lens cleaning apparatus. 4,607,652, Cl. 134-184.000.
Zaborney, John F., to Duracell Inc. Cell jacket. 4,608,323, Cl. 429-167.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,608,582, Cl. 357-22.000.
Zakhodyakin, Petr A.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.
Zangerle, Eduard: *See*—
Salm, Franz; Zangerle, Eduard; and Muriset, Jean-Fracois, 4,607,988, Cl. 407-114.000.

Zapandi, Vladimir A.: *See*—
Yarmashev, Jury N.; Zapandi, Vladimir A.; and Tkachev, Valentin N., 4,607,480, Cl. 130-27.00T.

Zeavin, Mark. Half height data cartridge tape drive. 4,608,615, Cl. 360-96.500.

Zeiser, Manfred. Dental model in conjunction with a base plate for making a dental model. 4,608,016, Cl. 433-74.000.

Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, to United Technologies Corporation. Method and apparatus for determining spring preloading in a fluid handling device. 4,607,421, Cl. 29-157.10R.

Zenbutsu, Tadashi: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; and Asami, Hajime, 4,608,087, Cl. 106-18.120.

Zendejas-Martinez, Eugenio: *See*—
Villarreal-Trevino, Juan A.; Zendejas-Martinez, Eugenio; and Lopez-Ramos, Hector, 4,608,240, Cl. 423-230.000.

Zhavoronkov, Andrei V.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Zijsling, Djurre H., to Shell Oil Company. Rotary drill bit with cutting elements having a thin abrasive front layer. 4,607,711, Cl. 175-329.000.

Zimmermann, Hans G. Downdraft stove with tubular grating. 4,607,610, Cl. 126-76.000.

Zoch, Roger L., to Nelson Industries, Inc. System for separating liquids. 4,608,160, Cl. 210-114.000.

Zorikov, Vladimir V.: *See*—
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Zueva, Olga A.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Zulauf, Karlheinz; and Steigerwald, Franz, to Wella AG. Bottle with dosing device. 4,607,762, Cl. 222-48.000.

Zwart, Klaas. Wireline jar. 4,607,692, Cl. 166-178.000.

Zwiener, Rudolf; Mathis, Ernst; Thalmann, Theo; and Rohrich, Siegfried, to Aktiengesellschaft Adolph Saurer. Apparatus for controlling the warp thread tension by positional displacement of a back rest on a loom. 4,607,666, Cl. 139-115.000.

Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., to National Starch and Chemical Corporation. Imitation cheese products containing high amylose starch as partial or total caseinate replacement. 4,608,265, Cl. 426-582.000.

3D Video Corporation: *See*—
Alger, Stanton W., 4,608,105, Cl. 156-108.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF AUGUST, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bonerb, Timothy C.; and Bonerb, Vincent C. Bin for free flowing material. Re. 32,232, Cl. 222-95.000.

Bonerb, Vincent C.: *See*—
Bonerb, Timothy C.; and Bonerb, Vincent C., Re. 32,232, Cl. 222-95.000.

Brimacombe, J. Keith; and Hoefele, Enrique O., to Canadian Liquid Air Ltd. Non-ferrous metal treatment. Re. 32,234, Cl. 75-76.000.

Builders Concrete, Inc.: *See*—
Sluys, Wesley W., Re. 32,229, Cl. 114-267.000.

Canadian Liquid Air Ltd.: *See*—
Brimacombe, J. Keith; and Hoefele, Enrique O., Re. 32,234, Cl. 75-76.000.

DAGMA Deutsche Automaten-und Getrakemaschinen-Gesellschaft mit beschrankter Haftung & Co.: *See*—
Kuckens, Alexander; and Kohl, Horst, Re. 32,231, Cl. 222-81.000.

Forsberg, John H., to Lubrizol Corporation, The. Magnesium-containing complexes, method for their preparation, and compositions containing the same. Re. 32,235, Cl. 252-33.000.

Hoefele, Enrique O.: *See*—
Brimacombe, J. Keith; and Hoefele, Enrique O., Re. 32,234, Cl. 75-76.000.

International Business Machines Corporation: *See*—
Scheuerlein, Roy E., Re. 32,236, Cl. 365-149.000.

Kohl, Horst: *See*—
Kuckens, Alexander; and Kohl, Horst, Re. 32,231, Cl. 222-81.000.

Kuckens, Alexander; and Kohl, Horst, to DAGMA Deutsche Automaten-und Getrakemaschinen-Gesellschaft mit beschrankter Haftung & Co. Container for metered dispensing of liquid. Re. 32,231, Cl. 222-81.000.

Lubrizol Corporation, The: *See*—
Forsberg, John H., Re. 32,235, Cl. 252-33.000.

Nissan Motor Co., Ltd.: *See*—
Satoh, Seikoh; and Suzuki, Tadashi, Re. 32,230, Cl. 138-126.000.

Peletz, Harold, to Santa Rosa Cast Products Co. Precast concrete catch basin with form for gutter inlet. Re. 32,233, Cl. 404-5.000.

Santa Rosa Cast Products Co.: *See*—
Peletz, Harold, Re. 32,233, Cl. 404-5.000.

Satoh, Seikoh; and Suzuki, Tadashi, to Nissan Motor Co., Ltd. Rubber hose for automotive fuel line. Re. 32,230, Cl. 138-126.000.

Scheuerlein, Roy E., to International Business Machines Corporation. One device field effect transistor (FET) AC stable random access memory (RAM) array. Re. 32,236, Cl. 365-149.000.

Sluys, Wesley W., to Builders Concrete, Inc. Utility distribution system for marine floats. Re. 32,229, Cl. 114-267.000.

Suzuki, Tadashi: *See*—
Satoh, Seikoh; and Suzuki, Tadashi, Re. 32,230, Cl. 138-126.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See*—
Johnson, Philip A., 285,301, Cl. D13-23.000.
McCarthy, Alfred F., 285,302, Cl. D13-23.000.
St.Jacques, Kenneth R., 285,300, Cl. D13-23.000.

adidas Sportschuhfabriken Adi Dassler Stiftung & Co. KG: *See*—
Metzger, Dietrich, 285,379, Cl. D5-63.000.

Albertsen, Peter S., to Nu-Tec Incorporated. Catalytic converter. 285,308, 8-26-86, Cl. D15-5.000.

American Commercial Incorporated: *See*—
Laslo, Larry R., 285,273, Cl. D7-1.000.
Murai, Toschio, 285,277, Cl. D7-319.000.

Appel, Mel, to Mel Appel Company, The. Toy wagon. 285,322, 8-26-86, Cl. D21-71.000.

Appel, Mel, to Mel Appel Company, The. Toy golf cart. 285,323, 8-26-86, Cl. D21-80.000.

Arevalo, Alfred A.; and Arevalo, Mario M. Barbecue. 285,279, 8-26-86, Cl. D7-334.000.

Arevalo, Mario M.: *See*—
Arevalo, Alfred A.; and Arevalo, Mario M., 285,279, Cl. D7-334.000.

Ariaz, Dan; and Robison, Vance. Fog applicator for pesticide and herbicide chemical dispersion. 285,282, 8-26-86, Cl. D8-2.000.

Armstrong, Eric J.: *See*—
Hannah, Bruce R.; Stephens, William I.; Wilmot, George; and Armstrong, Eric J., 285,270, Cl. D6-511.000.

Associated Medical Systems, Inc.: *See*—
Morin, Marius J.; and Munro, Jack C., 285,368, Cl. D28-64.000.

AT&T Bell Laboratories: *See*—
Liuzzo, James G.; Proetta, William J.; Sylvester, Gordon E.; and Tilley, Alvin R., 285,305, Cl. D14-100.000.

AT&T Information Systems Inc.: *See*—
Joffe, Richard M.; Loosme, Oskar; and Sylvester, Gordon E., 285,306, Cl. D14-102.000.

Audette, Clifford J. Tongue cleaner. 285,341, 8-26-86, Cl. D24-23.000.

Audette, Clifford J. Tongue cleaner. 285,342, 8-26-86, Cl. D24-23.000.

B. F. Goodrich Company, The: *See*—
Manestar, Miroslav; and Skerl, Richard J., 285,297, Cl. D12-146.000.

Barker, Thomas G., to Paul K. Guillow, Inc. Toy glider. 285,324, 8-26-86, Cl. D21-89.000.

Berggreen, Ib H., to Interlego A.G. Toy construction piece simulating a slide. 285,325, 8-26-86, Cl. D21-108.000.

Berry, Richard D., Jr., to Design Institute America, Inc. Table. 285,267, 8-26-86, Cl. D6-430.000.

Big Time Inc.: *See*—
Chau, Jacky, 285,288, Cl. D10-32.000.

Black & Decker, Inc.: *See*—
Daher, Theodore G., 285,276, Cl. D7-309.000.

Blomqvist, Stefan, to Sunnex Equipment AB. Hammer. 285,284, 8-26-86, Cl. D8-77.000.

Boettger, Walter W., Jr. Hand grip exerciser. 285,329, 8-26-86, Cl. D21-198.000.

Boone, Frank L.; and Henlein, David. Cigarette holder. 285,362, 8-26-86, Cl. D27-2.000.

Bowsher, Robert L. Shoe rack. 285,266, 8-26-86, Cl. D6-412.000.

Brescia, Nicholas, to Master Sales/Management Corp. Ring. 285,291, 8-26-86, Cl. D11-34.000.

Breyer-Lindner, Brigitte. Hanging ornament. 285,293, 8-26-86, Cl. D11-125.000.

Bulgari, Gianni, to Partecipazioni Bulgari S.p.A. Ring. 285,292, 8-26-86, Cl. D11-37.000.

Bunschoten, Gerrit K.; van der Vlies, Gerardus J.; and van Berne, Joost, to Lever Brothers Company. Liquid soap dispenser. 285,271, 8-26-86, Cl. D6-545.000.

Bunschoten, Gerrit K.; van der Vlies, Gerardus J.; and van Berne, Joost, to Lever Brothers Company. Liquid soap dispenser. 285,272, 8-26-86, Cl. D6-545.000.

Cardiff, David L., Sr. Frame for physical exerciser. 285,328, 8-26-86, Cl. D21-191.000.

Cellini, Vito. Revolver barrel with integrated recoil reducer. 285,331, 8-26-86, Cl. D22-108.000.

Chapin, Eke: *See*—
Fly, Billy C., 285,298, Cl. D12-156.000.

Chau, Jacky, to Big Time Inc. Wrist watch. 285,288, 8-26-86, Cl. D10-32.000.

Cheng, Tsan-Hsiung. Multi-purpose soldering gun. 285,283, 8-26-86, Cl. D8-30.000.

Chevassus, Alain, to Lefebure Isolants Reunis. Box for cosmetic products or the like. 285,370, 8-26-86, Cl. D28-76.000.

Clark, Gary E., to Gilmore, G. Weber; and Heywood, Richard G., part interest to each. Combined crane and trailer toy. 285,326, 8-26-86, Cl. D21-132.000.

Clarke, Roger W., to Sinclair Research Limited. Computer program cartridge. 285,307, 8-26-86, Cl. D14-114.000.

Commonwealth Toy & Novelty Co., Inc.: *See*—
Keith, Brooke G., 285,260, Cl. D2-279.000.

Cope, Carroll W., to DG Shelter Products. Furniture rail or similar article. 285,269, 8-26-86, Cl. D6-491.000.

Daher, Theodore G., to Black & Decker, Inc. Drip coffeemaker or similar article. 285,276, 8-26-86, Cl. D7-309.000.

DeFlorio, Albert J. Combined comb and shoehorn. 285,365, 8-26-86, Cl. D28-25.000.

DeMars, Robert A. Cup holder. 285,274, 8-26-86, Cl. D7-70.000.

Demrick, Carl J.; and Hussey, Ronald D., to Shepherd Products Limited. Picture window fireplace screen. 285,336, 8-26-86, Cl. D23-138.300.

Design Institute America, Inc.: *See*—
Berry, Richard D., Jr., 285,267, Cl. D6-430.000.

DG Shelter Products: *See*—
Cope, Carroll W., 285,269, Cl. D6-491.000.

Dole, Charles M.: *See—*
Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., 285,356, Cl. D26-49.000.
Duarte-Martins, Herminio, Jr., to Duarte-Martins, Ulla Anette. Bone-plug drill bit. 285,343, 8-26-86, Cl. D24-28.000.
Duarte-Martins, Ulla Anette: *See—*
Duarte-Martins, Herminio, Jr., 285,343, Cl. D24-28.000.
Duracell Inc.: *See—*
Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., 285,356, Cl. D26-49.000.
E.G.O. Elektro-Gerate Blanc u. Fischer: *See—*
Fischer, Karl; and Schreder, Felix, 285,280, Cl. D7-346.000.
Enduro Binders, Inc.: *See—*
Maune, Michael E., 285,313, Cl. D19-32.000.
English, George J.; and Levin, Robert E., to GTE Products Corporation. Lamp-reflector module for use in a motor vehicle headlighting system. 285,351, 8-26-86, Cl. D26-28.000.
Enk, William A. Fire extinguisher discharge nozzle. 285,333, 8-26-86, Cl. D23-34.000.
Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Signal light for an automobile. 285,352, 8-26-86, Cl. D26-35.000.
Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Rear light for an automobile. 285,353, 8-26-86, Cl. D26-35.000.
Envall, Bjorn E. A.: *See—*
Wardle, Geoffrey P.; and Envall, Bjorn E. A., 285,299, Cl. D12-163.000.
Fischer, Karl; and Schreder, Felix, to E.G.O. Elektro-Gerate Blanc u. Fischer. Combined electric hotplate and mounting surface therefor. 285,280, 8-26-86, Cl. D7-346.000.
Fly, Billy C., to Chapin, Eke. Truck cover or similar article. 285,298, 8-26-86, Cl. D12-156.000.
Forcoven Products, Inc.: *See—*
Nevin, Donald T., 285,340, Cl. D24-17.000.
Foster Grant Corporation: *See—*
Rocha, Daniel, 285,310, Cl. D16-116.000.
Fukuchi, Eiji: *See—*
Kazusa, Susumu; Okamoto, Harunori; and Fukuchi, Eiji, 285,296, Cl. D12-136.000.
Galoppo, Agrippino, to Paim s.n.c. di Casole Patrizia & C. Articulated ball point pen. 285,314, 8-26-86, Cl. D19-42.000.
Gamm, Robert J., to Kangaroos U.S.A., Inc. Purse pocketed shoe. 285,261, 8-26-86, Cl. D2-309.000.
Gertig, Pamela: *See—*
Kosi, Barbara; and Gertig, Pamela, 285,315, Cl. D19-59.000.
Gilmore, G. Weber: *See—*
Clark, Gary E., 285,326, Cl. D21-132.000.
Gleason, Roger F.: *See—*
Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., 285,356, Cl. D26-49.000.
GTE Products Corporation: *See—*
English, George J.; and Levin, Robert E., 285,351, Cl. D26-28.000.
Hannah, Bruce R.; Stephens, William I.; Wilmot, George; and Armstrong, Eric J., to Knoll International, Inc. Universal keyboard mount. 285,270, 8-26-86, Cl. D6-511.000.
Henlein, David: *See—*
Boone, Frank L.; and Henlein, David, 285,362, Cl. D27-2.000.
Herzfeld, Ronald, to Thorwarth & Grebe OHG. Toothbrush assembly. 285,262, 8-26-86, Cl. D4-101.000.
Hestair Kiddicraft Limited: *See—*
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,320, Cl. D21-65.000.
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,321, Cl. D21-65.000.
Heywood, Richard G.: *See—*
Clark, Gary E., 285,326, Cl. D21-132.000.
HGM, Inc.: *See—*
Tanner, Howard M. C., 285,377, Cl. D34-21.000.
Hill, Percy H., to Stratford Laboratories. Handle for toothbrush or flossing aid. 285,263, 8-26-86, Cl. D4-104.000.
Howard, John D.: *See—*
Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., 285,356, Cl. D26-49.000.
Hp Chemicals, Inc.: *See—*
Shalon, Yehuda; Shalon, Tadmor; and Meyer, Danny D., 285,290, Cl. D10-81.000.
Huber, Otto L.; and Magidson, Mark, to Moldex/Metric Products, Inc. Face mask. 285,374, 8-26-86, Cl. D29-8.000.
Hussey, Ronald D.: *See—*
Demrick, Carl J.; and Hussey, Ronald D., 285,336, Cl. D23-138.300.
Hutchins, James L., to Schering Corporation. Poultry vaccination unit. 285,375, 8-26-86, Cl. D30-99.000.
Idea Works, Inc., The: *See—*
Sharpe, Stephen N., 285,286, Cl. D8-356.000.
Inaba, Hiroshi, to Nitsuko Limited. Key telephone set. 285,304, 8-26-86, Cl. D14-58.000.
Interlego AG: *See—*
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CLASS 49

55 4,607,455
352 4,607,456
400 4,607,457

CLASS 51

102 4,607,459
119 4,607,458
165 TP 4,607,460
165.8 4,607,461
213 4,607,462
219 R 4,607,463
362 4,607,464

CLASS 52

12 4,607,465
144 4,607,466
169.6 4,607,467
172 4,607,468
220 4,607,469
226 4,607,470
509 4,607,471
698 4,607,472

CLASS 53

54 4,607,473
117 4,607,474
150 4,607,475
399 4,607,476
444 4,607,477
502 4,607,478
530 4,607,479

CLASS 55

16 4,608,060
26 4,608,061
186 4,608,062
208 4,608,063
236 4,608,064
269 4,608,065
385 A 4,608,066

CLASS 57

3 4,607,481
22 4,607,482
334 4,607,483
337 4,607,484
401 4,607,485

CLASS 60

734 4,607,486
752 4,607,487

CLASS 62

9 4,608,067
18 4,608,068
26 4,608,069
45 4,607,488
49 4,607,489
51 4,607,490
55.5 4,607,491
4,607,492
4,607,493
62 4,607,494
63 4,607,495
64 4,607,496
179 4,607,497
185 4,607,498
262 4,607,499
4,607,500
288 4,607,501
294 4,607,502
503 4,607,503

CLASS 65

3.12 4,608,070
13 4,608,071
79 4,608,072
163 4,608,073
164 4,608,074
362 4,608,075

CLASS 66

24 4,607,504
117 4,607,505
125 R 4,607,506
132 T 4,607,507

CLASS 68

22 R 4,607,508
27 4,607,509

CLASS 70

95 4,607,510

CLASS 71

76 4,608,076
77 4,608,077
88 4,608,078
92 4,608,079
4,608,080
94 4,608,081
118 4,608,082

CLASS 72

16 4,607,511
46 4,607,512
137 4,607,513
354 4,607,514
358 4,607,515
405 4,607,516
449 4,607,517
453.12 4,607,518
457 4,607,519

CLASS 73

19 4,607,520
23 4,607,521
37.5 4,607,525
49.2 4,607,522
116 4,607,523
152 4,607,524
432 A 4,607,527
432 PS 4,607,526
602 4,607,528
660 4,607,529
708 4,607,530
794 4,607,531
819 4,607,532
861.12 4,607,533
862.01 4,607,534
862.47 4,607,535
863.91 4,607,536

CLASS 74

10.33 4,607,537
417 4,607,538
492 4,607,539
493 4,607,540
758 4,607,541
869 4,607,542

CLASS 75

76 Re.32,234
83 4,608,083
101 R 4,608,084
247 4,608,085

CLASS 81

3.09 4,607,543
9.4 4,607,544
9.51 4,607,545
53.2 4,607,547
57.39 4,607,546
427 4,607,548

CLASS 82

2 E 4,607,549
9 4,607,550

CLASS 83

54 4,607,551
71 4,607,552
164 4,607,553
277 4,607,554
471.2 4,607,555
511 4,607,556
687 4,607,557
879 4,607,558

CLASS 84

275 4,607,559

CLASS 89

16 4,607,560
37.04 4,607,561
40.03 4,607,562
132 4,607,563

CLASS 98

2 4,607,564
37 4,607,566
40.24 4,607,565
42.12 4,607,567
50 4,607,568

CLASS 99

426 4,607,569

CLASS 100

116 4,607,570

CLASS 101

365 4,607,571
426 4,607,572

CLASS 102

275.8 4,607,573

CLASS 104

126 4,607,574
304 4,607,575

CLASS 106

12 4,608,086
18.12 4,608,087
35 4,608,088
90 4,608,089
272 4,608,090

CLASS 108

110 4,607,576
144 4,607,577
145 4,607,578

CLASS 109

25 4,607,579

CLASS 111

1 4,607,580
73 4,607,581

CLASS 112

121.12 4,607,582
130 4,607,583
147 4,607,584
454 4,607,585

CLASS 114

219 4,607,586
267 Re.32,229

CLASS 118

37 4,607,587
52 4,607,588
201 4,607,589
314 4,607,590
666 4,607,591
689 4,607,592
719 4,607,593

CLASS 119

1 4,607,594
2 4,607,595
14.02 4,607,596
51 R 4,607,597

CLASS 123

56 BC 4,607,598
90.16 4,607,600
90.31 4,607,601
90.5 4,607,599
425 4,607,602
492 4,607,603
572 4,607,604

CLASS 124

6 4,607,605
89 4,607,606

CLASS 125

11 CD 4,607,607

CLASS 126

30 4,607,608
39 J 4,607,609
76 4,607,610
121 4,607,611
4,607,612
215 4,607,613
299 E 4,607,614
362 4,607,615
445 4,607,616

CLASS 128

1 R 4,607,617
4,607,618
4 4,607,619
4,607,620
6 4,607,621
4,607,622
11 4,607,623
24.2 4,607,624
26 4,607,625
43 4,607,626
66 4,607,627
80 A 4,607,629
80 C 4,607,628
127 4,607,630
132 D 4,607,631
156 4,607,633
203.25 4,607,634
207.15 4,607,635
334 C 4,607,637
334 R 4,607,636
335 4,607,638
419 E 4,607,639
425 4,607,640
663 4,607,642
680 4,607,641
715 4,607,643
743 4,607,632
785 4,607,644

CLASS 130

27 T 4,607,480

CLASS 131

109.1 4,607,645
309 4,607,646
365 4,607,647

CLASS 133

3 C 4,607,649
3 D 4,607,648
5 R 4,607,650

CLASS 134

3 4,608,091
62 4,607,651
184 4,607,652

CLASS 135

20 M 4,607,653
89 4,607,654
95 4,607,655
110 4,607,656

CLASS 136

256 4,608,451
261 4,608,452

CLASS 137

15.1 4,607,657
393 4,607,658
454.2 4,607,659
512.1 4,607,660
4,607,661
625.65 4,607,662
846 4,607,663

CLASS 138

89 4,607,664
126 Re.32,230
148 4,607,665

CLASS 139

115 4,607,666
429 4,607,667
452 4,607,668

CLASS 140

124 4,607,669

CLASS 141

1 4,607,670
329 4,607,671

CLASS 144

2 R 4,607,672
144.5 R 4,607,673

CLASS 148

6.11 4,608,092
6.3 4,608,098
6.35 4,608,093
11.5 N 4,608,094
33 4,608,095
4,608,096
33.3 4,608,097
37 4,608,099
111 4,608,100
127 4,608,101

CLASS 149

92 4,608,102

CLASS 150

52 R 4,607,674

CLASS 152

521 4,607,675

CLASS 156

64 4,608,103
78 4,608,104
108 4,608,105
182 4,608,106
190 4,608,107
219 4,608,108
247 4,608,109
250 4,608,110
306.6 4,608,111
345 4,608,112
438 4,608,113
497 4,608,114
519 4,608,115
523 4,608,116
610 4,608,117
643 4,608,118

CLASS 159

3 4,608,119
17.1 4,608,120

CLASS 160

74 4,607,676
84 R 4,607,677
332 4,607,678

CLASS 162

19 4,608,121
60 4,608,122
146 4,608,123
193 4,608,124
273 4,608,125

CLASS 164

5 4,607,679
134 4,607,680
418 4,607,682
453 4,607,681
463 4,607,683

CLASS 165

70 4,607,684
80.3 4,607,685
95 4,607,686
104.19 4,607,687
104.22 4,607,688
110 4,607,689
145 4,607,690

CLASS 166

88 4,607,691
178 4,607,692
242 4,607,693
250 4,607,694
272 4,607,695
275 4,607,696
280 4,607,697
285 4,607,698
303 4,607,699
4,607,700
368 4,607,701

CLASS 169

25 4,607,702

CLASS 171

1 4,607,703

CLASS 172

42 4,607,704
430 4,607,705
599 4,607,706
764 4,607,707
776 4,607,708

CLASS 173

170 4,607,709

CLASS 174

35 MS 4,608,453
65 SS 4,608,454

CLASS 175

249 4,607,710
329 4,607,711
410 4,607,712

CLASS 177

25 4,607,713

CLASS 178

22.17 4,608,455

CLASS 179

1.5 S 4,608,456
2 A 4,608,457
4,608,458
6.03 4,608,459
6.11 4,608,460
16 AA 4,608,461
81 B 4,608,462
115.5 R 4,608,463
170.2 4,608,464

CLASS 180

68.1 4,607,714
118 4,607,715
131 4,607,716
141 4,607,717
226 4,607,718
272 4,607,719

CLASS 181

135 4,607,720
249 4,607,721
252 4,607,722
272 4,607,723

CLASS 182

3 4,607,724
189 4,607,725
204 4,607,726

CLASS 184

38.1 4,607,727

CLASS 188

73.38 4,607,728
153 R 4,607,729
170 4,607,730

CLASS 192

3 S 4,607,733
3.29 4,607,731
11 4,607,735
12 R 4,607,732
18 A 4,607,736
67 R 4,607,734
88 A 4,607,737
109 R 4,607,738

CLASS 194

227 4,607,739

CLASS 198

320 4,607,740
345 4,607,741
398 4,607,742
415 4,607,743
461 4,607,744
706 4,607,745

CLASS 200

5 A 4,608,465
11 D 4,608,466
16 D 4,608,467
61.45 R 4,608,468
61.58 B 4,608,469
144 AP 4,608,470

CLASS 202

84 4,608,126

CLASS 203

48 4,608,127

CLASS 204

16 4,608,128
18.1 4,608,129
27 4,608,130
33 4,608,131
59 R 4,608,132
4,608,133
67 4,608,134
4,608,135
106 4,608,136
129 4,608,137
129.3 4,608,138
181.7 4,608,139
182.3 4,608,140
182.5 4,608,141
192 M 4,608,142
224 M 4,608,143
257 4,608,144
279 4,608,145
299 R 4,608,146
301 4,608,147
408 4,608,148
418 4,608,149

CLASS 206

53 4,607,746
232 4,607,747
254 4,607,748
443 4,607,750
610 4,607,749

CLASS 208

22 4,608,150
33 4,608,151
108 4,608,152
112 4,608,153

CLASS 209

166 4,608,154
224 4,608,155
353 4,608,156

CLASS 210

86 4,608,157
96.1 4,608,158
101 4,608,159
114 4,608,160
149 4,608,161
150 4,608,162
4,608,163
231 4,608,164
232 4,608,165
4,608,166
242.1 4,608,167
274 4,608,168
334 4,608,169
404 4,608,170
4,608,171
500.2 4,608,172
502.1 4,608,173
512.2 4,608,174
532.2 4,608,175
677 4,608,176
738 4,608,177
744 4,608,178
748 4,608,179
780 4,608,180
786 4,608,181

CLASS 211

41 4,607,751
65 4,607,752
87 4,607,753
183 4,607,754

CLASS 215

1 A 4,607,755
6 4,607,756
246 4,607,757

CLASS 219

8.5 4,608,471
10.43 4,608,472
10.49 R 4,608,473
10.55 R 4,608,474
69 M 4,608,476
69 V 4,608,477
69 W 4,608,475
4,608,478
87 4,608,479
121 LK 4,608,480
125.12 4,608,481
132 4,608,482
201 4,608,483

CLASS 220

23.83 4,607,758
266 4,607,759
314 4,607,760

CLASS 221

25 4,607,761

CLASS 222

48 4,607,762
81 Re.32,231
95 Re.32,232
102 4,607,763
207 4,607,764
321 4,607,765
386.5 4,607,766
504 4,607,767
556 4,607,768

CLASS 223

12 4,607,769
28 4,607,770
91 4,607,771

CLASS 224

30 A 4,607,772
42.45 R 4,607,773

CLASS 225

47 4,607,774
96.5 4,607,775

CLASS 226

171 4,607,776

CLASS 227

120 4,607,777

CLASS 228

2.5 4,607,778
106 4,607,779
118 4,607,780
175 4,607,781
180.2 4,607,782
265 4,607,783

CLASS 229

27 4,607,784
41 B 4,607,785
45 R 4,607,786

CLASS 235

101 4,608,484
379 4,608,485
380 4,608,486
383 4,608,487
384 4,608,488
462 4,608,489

CLASS 236

11 4,607,787
12.2 4,607,788
49 4,607,789
94 4,607,790

CLASS 237

71 4,607,791

CLASS 239

101 4,607,792
318 4,607,793
455 4,607,794
530 4,607,795

CLASS 241

3 4,607,796
23 4,607,797
46 B 4,607,802
99 4,607,798
101.7 4,607,799
159 4,607,800
199.1 4,607,801

CLASS 242

1.1 R 4,607,803
55.3 4,607,809
67.4 4,607,804
107.4 A 4,607,805
117 4,607,806
192 4,607,808

CLASS 244

13 4,607,811
129.5 4,607,812
145 4,607,813
147 4,607,814
161 4,607,815
329 4,607,810

CLASS 248

208 4,607,816
459 4,607,817
544 4,607,818

CLASS 250

201 4,608,490
311 4,608,491
372 4,608,492
397 4,608,493
461.1 4,608,494
517.1 4,608,495
561 4,608,496

CLASS 251

121 4,607,819
251 4,607,820
329 4,607,821
334 4,607,822

CLASS 252

8.512 4,608,182
33 Re.32,235
36 4,608,183
42.7 4,608,184
51.5 A 4,608,185
62.52 4,608,186
90 4,608,187
99 4,608,188
174.22 4,608,189
301.4 H 4,608,190
391 4,608,191
506 4,608,192
522 R 4,608,193
4,608,194
4,608,195
4,608,196
551 4,608,197
609 4,608,198

CLASS 254

134 4,607,823

CLASS 256

13.1 4,607,824

CLASS 260

410.9 R 4,608,202
505 N 4,608,204
506 4,608,205
544 F 4,608,206

CLASS 261

39 R 4,608,208
64 E 4,608,209

CLASS 264

3.2 4,608,210
4.6 4,608,211
24 4,608,212
45.1 4,608,213
45.5 4,608,214
56 4,608,215
70 4,608,216
249 4,608,217
315 4,608,218
4,608,219
510 4,608,220
556 4,608,221

CLASS 266

215 4,607,825
251 4,607,826

CLASS 267

107 4,607,827
140.1 4,607,828

CLASS 269

88 4,607,829

CLASS 270

41 4,607,830
58 4,607,831

CLASS 271

10 4,607,832
4,607,833
171 4,607,834
227 4,607,835
272 4,607,836
273 4,607,837
293 4,607,838

CLASS 272

97 4,607,839
117 4,607,840
125 4,607,841

CLASS 273

1 B 4,607,842
54 C 4,607,843
143 R 4,607,844
148 R 4,607,845
171 4,607,846
264 4,607,847
269 4,607,848
348.1 4,607,849
424 4,607,850

CLASS 277

1 4,607,851
4,607,852
12 4,607,853
152 4,607,854

CLASS 279

62 4,607,855

CLASS 280

47.18 4,607,856
47.26 4,607,857
491 E 4,607,858
632 4,607,859
650 4,607,860
702 4,607,861
765.1 4,607,862
804 4,607,863
808 4,607,864

CLASS 285

18 4,607,865
45 4,607,866
242 4,607,867
332 4,607,868

CLASS 289

17 4,607,869

CLASS 290

53 4,608,497

CLASS 292

338 4,607,870

CLASS 294

19.1 4,607,871
54.5 4,607,872
88 4,607,873

CLASS 296

1 S 4,607,874
97 D 4,607,875
100 4,607,876
191 4,607,877
199 4,607,878
201 4,607,879

CLASS 297

157 4,607,880
192 4,607,881
195 4,607,882
317 4,607,883
341 4,607,884
397 4,607,885
410 4,607,886
452 4,607,887

CLASS 299

2 4,607,888
33 4,607,889
43 4,607,890
92 4,607,891

CLASS 305

56 4,607,892

CLASS 307

22 4,608,498
66 4,608,499
72 4,608,500
105 B 4,608,501
243 4,608,502
270 4,608,503
442 4,608,504

CLASS 310

267 4,608,505
315 4,608,506
335 4,608,507
339 4,608,508
357 4,608,509
361 4,608,510

CLASS 312

15 4,607,894
126 4,607,895
201 4,607,896
209 4,607,897

CLASS 313

93 4,608,511
113 4,608,512
359.1 4,608,513
386 4,608,514
412 4,608,515
477 R 4,608,516
4,608,517
481 4,608,518
528 4,608,519

CLASS 315

39.3 4,608,520
47 4,608,521
241 P 4,608,522
244 4,608,523

CLASS 318

254 4,608,524
568 4,608,525
628 4,608,526
685 4,608,527

CLASS 320

2 4,608,528

CLASS 323

275 4,608,529
315 4,608,530

CLASS 324

73 R 4,608,531
4,608,532
142 4,608,533
238 4,608,534
244 4,608,535
399 4,608,536

CLASS 328

237 4,608,537

CLASS 329

103 4,608,538
4,608,539
107 4,608,540

CLASS 330

53 4,608,497
10 4,608,541
279 4,608,542

CLASS 331

8 4,608,543
109 4,608,544

CLASS 335

16 4,608,545
20 4,608,546
297 4,608,547

CLASS 337

201 4,608,548

CLASS 338

34 4,608,549

CLASS 339

3 S 4,607,898
19 4,607,899
37 4,607,900
59 L 4,607,901
61 R 4,607,902
63 R 4,607,903
108 R 4,607,904
176 M 4,607,905
192 R 4,607,906
258 P 4,607,907

CLASS 340

22 4,608,550
53 4,608,551
310 R 4,608,552
347 AD 4,608,555
347 DD 4,608,554
347 NT 4,608,553
628 4,608,556
715 4,608,557
784 4,608,558
825.5 4,608,559
825.52 4,608,560
4,608,561
825.59 4,608,562
870.02 4,608,563
4,608,564
870.17 4,608,565

CLASS 343

5 PD 4,608,566
7 A 4,608,567
8 4,608,568
384 4,608,569
704 4,608,570
781 P 4,608,571
792.5 4,608,572
894 4,608,573
895 4,608,574

CLASS 346

33 R 4,608,575
49 4,608,576
140 R 4,608,577
160 4,608,578
209 4,608,579
216 4,608,580

CLASS 350

6.8 4,607,908
96.14 4,607,909
96.20 4,607,910
4,607,911
96.30 4,607,912
247 4,607,913
320 4,607,914
321 4,607,915
376 4,607,916
392 4,607,917
426 4,607,918
507 4,607,919
536 4,607,920
4,607,921

CLASS 351

208 4,607,922
239 4,607,923

CLASS 353

101 4,607,924

CLASS 354

63 4,607,925
78 4,607,926
182 4,607,927
304 4,607,928
318 4,607,929
322 4,607,930
400 4,607,931
468 4,607,932

CLASS 355

3 DD 4,607,933
4,607,938
4,607,939
3 DR 4,607,936
3 R 4,607,934
4,607,937
4,607,940
4,607,941
3 SH 4,607,942
3 TR 4,607,935
14 D 4,607,944
4,607,954
14 R 4,607,943
4,607,945
4,607,946
15 4,607,947
24 4,607,948

40 4,607,949
41 4,607,950
51 4,607,951
84 4,607,952
91 4,607,953

CLASS 356

342 4,607,955
375 4,607,956

CLASS 357

17 4,608,581
22 4,608,582
4,608,583
23.4 4,608,584
23.5 4,608,585
30 4,608,586
4,608,587
34 4,608,588
4,608,589
38 4,608,590
54 4,608,591
80 4,608,592

CLASS 358

10 4,608,593
11 4,608,594
29 4,608,595
81 4,608,596
113 4,608,597
4,608,598
4,608,599
138 4,608,600
146 4,608,601
148 4,608,602
183 4,608,603
188 4,608,604
209 4,608,605
213 4,608,606
4,608,608
260 4,608,607
320 4,608,609
324 4,608,610
328 4,608,611

CLASS 360

26 4,608,612
78 4,608,613
95 4,608,614
96.5 4,608,615
132 4,608,616
133 4,608,617
135 4,608,618

CLASS 361

31 4,608,619
154 4,608,620
428 4,608,621

CLASS 362

32 4,608,622
80 4,608,623
226 4,608,624

CLASS 363

21 4,608,625
56 4,608,626
131 4,608,627

CLASS 364

141 4,608,628
200 4,608,629
4,608,630
4,608,631
4,608,632
4,608,633
4,608,634
414 4,608,635
422 4,608,636
424 4,608,637
4,608,638
4,608,639
431.03 4,608,640
434 4,608,641
449 4,608,656
470 4,608,642
474 4,608,643
4,608,644
4,608,645
478 4,608,646
481 4,608,647
483 4,608,648
491 4,608,649
508 4,608,650
513 4,608,651
521 4,608,652
522 4,608,653
559 4,608,654
569 4,608,655
571 4,608,657
574 4,608,658
737 4,608,659
768 4,608,660
900 4,608,661
4,608,662
4,608,663
4,608,664
4,608,665

CLASS 365

19 4,608,677
149 Re.32,236
182 4,608,666
189 4,608,667
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	309	285,261		346	285,280	D13—	23	285,300			285,320			285,340		85	285,360
D4—	101	285,262		363	285,281			285,301			285,321		23	285,341		138	285,361
	104	285,263	D8—	2	285,282			285,302		71	285,322			285,342	D27—	2	285,362
D5—	63	285,379		30	285,283	D14—	39	285,303		80	285,323		28	285,343	D28—		285,363
D6—	327	285,264		77	285,284		58	285,304		89	285,324		31	285,344			285,364
	405	285,265		98	285,285		100	285,305		108	285,325		33	285,345		25	285,365
	412	285,266		356	285,286		102	285,306		132	285,326		38	285,346		35	285,366
	430	285,267	D9—	434	285,287		114	285,307		147	285,327		51	285,347		57	285,367
	470	285,268	D10—	32	285,288	D15—	5	285,308		191	285,328		54	285,348		64	285,368
	491	285,269		64	285,289	D16—	101	285,309		198	285,329		64	285,349		73	285,369
	511	285,270		81	285,290		116	285,310		242	285,330	D25—	2	285,350		76	285,370
	545	285,271	D11—	34	285,291	D18—	7	285,311	D22—	108	285,331	D26—	28	285,351		78	285,371
		285,272		37	285,292		12	285,312	D23—	21	285,332		35	285,352		83	285,372
D7—	1	285,273		125	285,293	D19—	32	285,313		34	285,333			285,353			285,373
	70	285,274		143	285,294		42	285,314		90.1	285,334		41	285,354	D29—	8	285,374
	72	285,275	D12—	118	285,295		59	285,315		122	285,335			285,355	D30—	99	285,375
	309	285,276		136	285,296		99	285,316		138.3	285,336		49	285,356	D32—	70	285,376
	319	285,277		146	285,297	D20—	43	285,317	D24—	4	285,337		61	285,357	D34—	21	285,377
	321	285,278		156	285,298	D21—	17	285,318		8	285,338		77	285,358		33	285,378

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